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North Springs Habitat Enhancement Project

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North Springs Habitat Enhancement Project

DOI-BLM-UT-G020-2014-0046-EA

1.0 PURPOSE & NEED

1.1 Introduction

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of the North Springs Habitat Enhancement Project as proposed by the Bureau of Land Management (BLM) Price Field Office (PFO). The EA is a site-specific analysis of potential impacts that could result with the implementation of a proposed action or alternatives to the proposed action. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts could result from the analyzed actions. “Significance” is defined by NEPA and is found in regulation 40 CFR 1508.27.

An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of “Finding of No Significant Impact” (FONSI). If the decision maker determines that this project has “significant” impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record may be signed for the EA approving the selected alternative, whether the proposed action or another alternative. A Decision Record (DR), including a FONSI statement, documents the reasons why implementation of the selected alternative would not result in “significant” environmental impacts (effects) beyond those already addressed in the BLM Price Field Office Resource Management Plan (RMP), (October, 2008).

1.2 Background

In many areas of the southwestern United States and particularly across public lands, pinyon pine and juniper trees are dominant species. Although controversy exists regarding the historic density and structure of the pinyon-juniper woodlands that currently occupy millions of acres of land across the Colorado Plateau region, it is generally accepted that much of what is now pinyon-juniper woodland may once have been land vegetated dominantly by grasses and forbs with no more than 10-to-15 trees every two-to-three acres (Brockway, et al, *Journal of Environmental Management* (2002) 179-197). Climate, grazing, and fire suppression are the major factors most often linked to the expansion of pinyon-juniper woodlands (Miller and Wigand, 1994).

Historical conditions and historic fire occurrence in pinyon-juniper woodlands can vary due to many different contributing factors. Fire patterns and fire behavior are closely related to unique topography, soils, environmental conditions, and vegetation that is present at a given time (RMRS-GTR-202, 2007). Prior to European settlement, more complex vegetative communities contained a mixture of fire patterns and behavior based on their multifaceted fuel types. In general, studies show that southern Utah sagebrush and tree-dominated cover was fifty percent less in pre-Euro American settlement landscapes than in present day (RMRS-GTR-202) with greater mixtures of size and age-classes of trees. Fires may have been infrequent across the area, although patterns of disturbance indicate that there was a shifting distribution of woodland and sagebrush

dominance throughout the landscape (RMRS-GTR-202). Canyon bottoms and swales appear to have the highest fire frequencies with larger fires occurring during periods of drought.

Within the proposed North Springs Project area pinyon-juniper woodlands have begun expanding, encroaching, and infilling on sagebrush habitats and reduced understory vegetation. This is a concern for many wildlife species that depend on sagebrush and other understory plants for survival. This area is Priority Habitat Management Area (PHMA) and General Habitat Management Area (GHMA) for Greater Sage-Grouse (GRSG) (*Centrocercus urophasianus*). In addition, this area is crucial winter habitat for deer and elk. These species depend upon sagebrush and other understory vegetation for food to survive the winter. With the threat of wildfire and encroachment on sagebrush habitats, we propose this pinyon-juniper removal project.

1.3 Need for the Proposed Action

The North Springs area is currently experiencing pinyon-juniper encroachment (Figure 1). This expansion, encroachment and infilling throughout the area is threatening the local ecosystems by degrading the landscape. This degradation occurs because the closed canopy of dense pinyon-juniper stands prevents understory vegetation from having the ability to compete for essential resources such as moisture and sunlight, which prevents it from establishing or surviving in these conditions. This can have impacts on wildlife at multiple trophic levels by reducing food for herbivores and in turn reducing numbers of available prey for carnivorous species (e.g. Golden Eagles).



Figure 1 - Picture showing an example of pinyon/ juniper trees beginning to encroach and reduce other understory species within the proposed North Springs project area.

In addition to the concerns posed to wildlife from expanding pinyon/juniper tree stands and the loss of understory vegetation, is the increased threat of greater fire intensities as fuel loads increase. The combination of increased fuel loads and high fire frequency increases the possibility for high-severity wildfire in the area. Increased fire size and intensity could put local infrastructure in the North Springs vicinity at risk and allow for invasive species to more easily establish and dominate the ecosystem.

Ecological restoration is generally approached from the context of the "fundamental characteristics" of an ecosystem, which may be determined from historical data, commonly accepted indications of past conditions, and/or from scientific data collected directly from undisturbed sites. Over the past several decades, ecosystems on public lands in southeastern Utah, have experienced gradual losses of biodiversity, sustainability, and successional vegetative development. Overall, compromised ecosystems have a lowered resiliency and cannot easily recover from impacts such as prolonged climate changes and or cycles of disturbance like high intensity fire.

Elements critical to an ecosystem that may result from or be affected by an uncharacteristically intense wildland fire or from lengthy periods of drought include accelerated erosion; altered and/or declining soil development and losses in sustainable nutrient cycling; loss of natural hydrologic pathways; deterioration or loss of watershed integrity resulting in degradation of water quality and quantity; and deterioration of habitat and habitat diversity (Bartos, D., et al, 1999).

Healthy sagebrush ecosystems should consist of a diverse array of plants and support a wide variety of wildlife species. However, sagebrush habitat throughout the Great Basin and Colorado Plateau is being degraded due to pinyon/juniper encroachment (Miller, R.F. and R.I. Tausch 2001). Research has clearly shown that pinyon and juniper woodlands have increased substantially throughout the Intermountain West over the past 130 - 150 years (Romme et al. 2009; Wisdom and Chambers 2009; Miller and Tausch 2001; Tausch and West 1995, 1988). Prior to 1860 sagebrush-steppe communities were dominant and trees were virtually absent on two-thirds of the landscape. Now, less than one-third of the landscape is treeless with more than 90% of the trees establishing since 1860 (Miller et al. 2008).

Without disturbance these woodlands will continue to mature and expand leading to increased fuel loading and nearly closed canopy conditions within the next 50 years (Miller et al. 2008). Where pinyon/juniper dominates they out-compete understory species for light, moisture, and nutrients eventually resulting in nearly complete removal of the understory (Miller et al. 2000, 2005). A diverse understory, consisting of shrubs, forbs and grasses are key to ecosystem resilience which promotes soil stability and resistance to invasive species like cheatgrass and enables a system to recover naturally following disturbance. Excessive fuel buildup due to juniper expansion and infilling can eventually lead to catastrophic wildfire which may threaten private property and further degrade the ecosystem.

Degraded sagebrush habitat can be improved by removing junipers and reseeding with perennial species where desirable understory species are lacking (USDI Bureau of Land Management 1999, 2000). This proactive approach reduces the risk of catastrophic wildfire and promotes ecosystem resiliency.

1.4 Purpose(s) of the Proposed Action

Priority habitat management areas and general habitat management areas for Greater sage-grouse comprise a bulk of the analysis area. In addition to GRSG the analysis area contains crucial winter range for mule deer (*Odocoileus hemionus*) and elk (*Cervus Canadensis*). The existing sagebrush plants are being browsed heavily by wintering big game species and are in poor condition. Pinyon and juniper are encroaching on sagebrush openings, which are causing a reduction in diversity and production of Wyoming big sagebrush along with the associated herbaceous understory. Maintaining and enlarging the sagebrush openings would improve the shrub and herbaceous components of the understory benefiting wildlife, sagebrush obligate species.

Opening up the canopy through pinyon/juniper tree removal activities will also reduce the potential for damage from high-severity wildland fire, while creating environmental site conditions favorable to grasses, forbs, and shrub establishment. This project will have the following objectives:

1. Enhance and expand sagebrush and grassland-steppe habitat; improving soils, increasing forage and improving habitat for GRSG, wildlife and livestock while preventing and discouraging the spread of invasive plant species. A number of areas within the proposed project area were once open sagebrush communities that have experienced pinyon-juniper encroachment, leading to a loss of vegetative diversity and key sagebrush habitat for wildlife. Retention and improvement of a healthy sagebrush component is critical for sage-grouse, elk, and deer winter range as well as other sagebrush dependent species.
2. Improve ecosystem function and restore vegetative resilience to facilitate recovery from wildland fire. Because watershed health involves the combined workings of a watershed such as land use, soils, and vegetation, the long-term objectives of this restoration treatment are relevant to all of these resources.
3. Protect infrastructure, wildlife habitat, and other resources in the area from a severe, high intensity wildland fire while improving habitat diversity, resiliency, and vigor.

1.5 Conformance with BLM Land Use Plan(s)

As required by 43 CFR 1610.5, the proposed action is in conformance with established management guidelines. The Price Field Office Record of Decision and Approved Resource Management Plan (RMP/ROD), October, 2008 allows vegetation manipulation to achieve desired vegetation conditions.

The ROD/RMP identifies pinyon-juniper woodland as a priority vegetation community and authorizes management and maintenance to move woodlands toward their approximate historic range (ROD/RMP, Vegetation, VEG-12, page 71).

Where possible, implement the conservation actions identified in the *Utah Comprehensive Wildlife Conservation Strategy* (Gorrell et al. 2005), which identifies priority wildlife species and habitats, identifies and assesses threats to their survival, and identifies long-term conservation actions needed, including those on BLM-administered lands (WL-13; PFO App. RMP Fish and Wildlife – p 83).

1.6 Relationship to Statutes, Regulations, or Other Plans

This EA was prepared in conformance with the NEPA and with all applicable regulations and policies subsequently implemented, including the Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), the BLM National Environmental Policy Act Handbook H-1790-1, and the U.S. Department of the Interior Department Manual 516, Environmental Quality.

Table 1 – Authorities and Responsibilities

Federal Authorities and Responsibilities	
Land Management and Use	
Federal Land Policy and Management Act of 1976, Section 201(a) (PL 94-579; 43 USC 1701 et seq.)	Directs the BLM to manage public lands “in a manner that would protect the quality of scientific, scenic, historic, ecological, environmental, air and atmospheric, water resources and archeological values” and to develop resource management plans (RMPs) consistent with those of state and local governments to the extent that BLM programs also comply with federal laws and regulations.
National Environmental Policy Act of 1969 (PL 91-190; 42 USC 4321); 40 CFR Parts 1500-1508 CEQ implementation of NEPA; BLM Handbook H-1790-1; U.S. Department of the Interior Department Manual 516, Environmental Quality	Evaluation of impacts to environmental resources that may result from a proposed action prior to its implementation.
Secretarial Order 3336 (January 2015)	Sets forth enhanced policies and strategies for preventing and suppressing rangeland fire and for restoring sagebrush landscapes impacted by fire across the West. These actions are essential for conserving habitat for the greater sage-grouse.
Vegetation	
Executive Order 13112, Invasive Species	Directs federal agencies to prevent the introduction of invasive species and

Federal Authorities and Responsibilities	
	provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause.
Federal Noxious Weed Act of 1974 (7 U.S.C. §§ 2801-2814, January 3, 1975, as amended 1988, 1990 and 1994); Noxious Weed Control and Eradication Act of 2004 (7 U.S.C. 7781- 7786)	Monitoring and treatment of weed infestations including performance of corrective actions. Provides assistance through states to eligible weed management entities to control or eradicate harmful and non-native weeds on public and private lands.
Public Rangelands Improvement Act of 1978 (43 U.S.C. §§ 1901-1908, October 25, 1978)	Requires the BLM to manage, maintain, and improve the condition of the public rangelands so they become as productive as feasible.
National Fire Plan and Healthy Forests Restoration Act of 2003 (P.L. 108-148)	The President and Congress have directed the DOI and BLM, through implementation of the National Fire Plan and Healthy Forests Restoration Act of 2003, to take more aggressive actions to reduce catastrophic wildfire risk on public lands. Actions should be taken to manage vegetation in a manner that provides for long-term economic sustainability of local communities by improving the health of the nation's forests and the habitat for fish and wildlife.
Noxious Weed Control Act of 2004	Established a program to provide assistance through states to eligible weed management entities to control or eradicate harmful, nonnative weeds on public and private lands.
<i>Pulling Together: National Strategy for Invasive Plant Management</i> (BLM 1998a)	Illustrates the goals and objectives of a National invasive plant management plan (prevention, control and eradication)
The Carson-Foley Act of 1968 (P.L. 90-583, 43 U.S.C. § 1241)	Directs federal agencies to enter upon lands under their jurisdiction that have noxious plants (i.e., noxious weeds), and destroy noxious plants growing on such lands.
Plant Protection Act of 2000 (Public Law 106-224; includes the management of undesirable plants on federal lands).	Authorize the BLM to manage noxious weeds and to coordinate with other federal and state agencies in activities to eradicate, suppress, control, prevent, or retard the spread of any noxious weeds on federal lands.

Federal Authorities and Responsibilities	
Executive Order 13112 of 1999 for Invasive Species	The express purpose of preventing the introduction of invasive species, providing for their control and minimizing the economic, ecological, and human health impacts that invasive species cause.
Wildlife	
Endangered Species Act of 1973 (PL. 85-624; 16 USC 661, 664 1008)	Coordination, consultation and impact review regarding federally listed threatened and endangered species.
Migratory Bird Conservation Act of 1929, as amended,	Makes it unlawful to directly, or indirectly, harm migratory birds. If the USFWS determines that migratory birds could be harmed by BLM vegetation treatment actions, the two agencies would develop a site-specific assessment and mitigation to prevent harm to these birds.
Migratory Bird Treaty Act of 1918 (16 USC 703-712, as amended); EO 13186 Responsibilities of Federal Agencies to Protect Migratory Birds; BLM MOU WO-230-2010-04 To Promote the Conservation of Migratory Birds	Migratory bird impact coordination and protection of nesting migratory birds.
Fish and Wildlife Coordination Act	This Act authorizes the preparation of plans to protect wildlife resources and in most cases requires consultation with the Fish and Wildlife Service.
Other Federal Laws that Govern Activities on Public Lands	
Clean Air Act, as revised in 1990	Primarily governs prescribed fire smoke emissions, and requires the United States Environmental Protection Agency (USEPA) and states to carry out programs to assure attainment of the National Ambient Air Quality Standards.
Safe Drinking Water Act, as amended in 1986 and in 1996	Is designed to protect the quality of public drinking water and its sources.
The Clean Water Act, as revised in 1981 and in 1987	Regulates discharges into waters of the United States, including wetlands. As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.
State of Utah Authorities and Responsibilities	
Vegetation	

Federal Authorities and Responsibilities	
Utah Administrative Code R68-9 (Utah's Noxious Weed Act)	Establishes the designation of noxious and invasive weeds, and provides methods to prevent their spread. Establishes County reporting on noxious and invasive weed status.
Utah's Greater Sage-grouse Management Plan (2013)	"Utah's Conservation Plan for Greater Sage-grouse (Plan) is designed to protect high-quality habitat, enhance impaired habitat and restore converted habitat to support, in Utah, a portion of the range-wide population of greater sage-grouse (<i>Centrocercus urophasianus</i>) necessary to eliminate threats to the species". The plan specifically states in 5.4 Vegetation Management, "removal of encroaching conifers may create new habitat or increase the carrying capacity of habitat and thereby expand grouse populations."
Cultural Resources	
Section 106 of National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.) and Advisory Council Regulations on the Protection of Historic and Cultural Properties, as amended (36 CFR. Part 800)	Utah State Historic Preservation Office consultation on cultural resource survey, evaluation, and mitigation.
Wildlife	
UDWR Rules and Regulations, Rule 657 series; UAC Title 23, Wildlife Resources of Utah. Utah Division of Wildlife Resources	Coordination on wildlife and state-sensitive species; management of big game and wildlife.
Carbon County Authorities and Responsibilities	
Carbon County Plan (1997, amended 2010)	1.1 Objective: The removal of pinion and juniper woodlands on lower elevation ranges by the use of prescribed fire or mechanical raiiling, biomass shredding or other means. 1.1.2 Strategy: Plan projects to remove pinion and juniper overgrowth to allow grass, forbs and other desirable vegetation to be established for livestock and wildlife.

The Healthy Lands Initiative (HLI) was launched by the Secretary of the Interior in 2007 to improve the health of public lands in the western United States by accelerating land restoration and increasing productivity. The 2009 federal budget increased dollars for HLI and directed funding toward landscape-level restoration efforts in Utah and other western states. A portion of Utah's HLI funding was allocated for the restoration of sagebrush habitat through the Utah Partners for Conservation and Development (UPCD),

while additional funds were directed toward Utah's Watershed Restoration Initiative (WRI). The WRI is also a UPCD-sponsored initiative that encourages collaboration among landowners, private organizations, state agencies, and federal agencies such as the BLM. WRI goals include a focus on the restoration and management of ecosystems to enhance wildlife and biological diversity, to improve watersheds by increasing water quality and yield, and to provide opportunities for sustainable land use. Of primary focus for the proposed action is the Utah WRI approach to ecosystem restoration through vegetation management and seeding. The BLM has submitted requests for collaborative funding to augment the budget for this restoration project.

1.7 Identification of Issues

Project discussion, design, and scoping have been ongoing with resource specialists. The project proposal was presented to the PFO resource staff on October 31, 2014 with comments and mitigation incorporated into the project design. An on-site discussion on July 16, 2014 was also conducted with BLM specialists and resource staff from the Utah Division of Wildlife Resources. The interested public was notified of the proposed treatment and the analysis phase of the project on September 23, 2014 through the Utah BLM State Office Environmental Notification Bulletin Board. Coordination with Utah Division of Wildlife Resources and U.S. Fish and Wildlife Services continued through the development of the EA. Team analysis identified potential impacts (PI) for the proposed action to the resources listed below:

1.7.1 Fuels/Fire Management

- Does the proposed project decrease chances of extreme fire moving through the area?
- How would the proposed action increase the safety for firefighters and public within the Analysis Area?
- In what ways would the proposed action convert FRCC 2/3 lands to FRCC 1/2?

1.7.2 Livestock Grazing

- How will the project affect permittees?
- In what ways will the proposed action affect Rangeland Conditions?

1.7.3 Vegetation: Invasive Species/Noxious Weeds

- What invasive species could be introduced or spread by proposed action?

1.7.4 Vegetation: Excluding USFWS Designated Species and BLM Sensitive Species

- What species will be impacted?

1.7.5 Vegetation: Woodlands/Forestry

- How will the project impact pinyon juniper within the analysis area?
- What types of woodland products will be utilized

1.7.6 Soils

- How would the proposed project affect soils?

1.7.7 Water: Hydrologic Conditions

- In what ways will the proposed project increase or decrease infiltration rates and runoff potential?

1.7.8 Water: Surface Water Quality

- What is the potential that changes in the cover and composition of vegetation resulting from implementation of the proposed action and would it influence water quality?
- Would short-term reductions in the cover and biomass of vegetation resulting from implementation of the proposed action alter turbidity levels in streams and rivers?

1.7.9 Wildlife:

- In what ways will this project restore habitat for the majority of wildlife that occupy the proposed treatment area?

1.8 Issues Considered but Eliminated from Further Analysis

Issues considered but eliminated from further analysis are provided in the BLM's interdisciplinary team review (see Interdisciplinary Team Checklist, Appendix A). This checklist provides rational why the pertinent resources are not impacted to a degree that detailed analysis is required and identifies resources that are not present.

1.9 Summary

This chapter has presented the purpose and need of the proposed project, as well as the relevant issues, i.e., those elements of the human environment that could be affected by the implementation of the proposed project. In order to meet the purpose and need of the proposed project in a way that resolves the issues, the BLM has considered and/or developed a range of action alternatives. These alternatives are presented in Chapter 2. The potential environmental impacts or consequences resulting from the implementation of each alternative considered in detail are analyzed in Chapter 4 for each of the identified issues.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Introduction

This Environmental Assessment (EA) has been prepared to analyze fuels reduction treatments within the North Springs Analysis Area. The EA is a site-specific analysis of potential impacts that could result in the implementation of the proposed action or alternatives to the proposed action.

The No Action alternative is considered and analyzed to provide a baseline for comparison of the impacts of the proposed action. No potential impacts have been identified therefore there are no issues to resolve through additional mitigation or other action alternatives.

The EA assists the BLM in project planning and ensures compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions. "Significance" is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for

determining whether to prepare an Environmental Impact Statement (EIS) or a statement of “Finding of No Significant Impact” (FONSI). A Decision Record (DR), which includes a FONSI statement, is a document that briefly presents the reasons why implementation of the proposed action would not result in “significant” environmental impacts (effects) beyond those already addressed in the Moab Field Office RMP, approved October 31, 2008.

If the decision maker determines that this project has “significant” impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) may be signed for the EA approving the alternative selected.

2.2 Alternative A – Proposed Action

The Fuels Program for the Bureau of Land Management (BLM) Canyon Country Fire Zone (CYFZ) and Price Field Office (PFO) propose to implement a habitat enhancement fuels project within approximately 76,779 acre analysis area within the North Springs area in the Price Field Office (Appendix B). In this effort the BLM and partners, including private landowners, county, state, and federal agencies, are working collaboratively at a landscape level on Greater Sage-Grouse and wildlife habitat restorations. This includes sharing expertise, providing assistance, coordinating partnership efforts, and identifying priorities. The proposed action would assist in this partnership endeavor for habitat enhancement.

The Good Neighbor Authority (GNA) and the FY 2012 Appropriations Act (Wildland Fire Management) clarify the use of federal appropriated funds and provides legislative authority for the Secretary of Interior to enter into procurement contracts, Stewardship contracts, grants, and cooperative agreements for hazardous fuels reduction activities on Federal and adjacent non-Federal lands for activities that benefit resources on Federal Land.

The project would be accomplished over approximately five to ten years; however, conflicts with other projects, extreme fire seasons, budgetary constraints, or other factors could extend the estimated project period to facilitate achievement of goals and objectives. Although most all of the 76,779 area analysis area could eventually be treated, the first two phases have been specifically identified. Treatment design and methods to accomplish goals and objectives are discussed below.

Ecological Site Units have been identified (NRCS, USDA Custom Soil Report... 2017) and is hereby incorporated by reference. The project area consist of the following treatment types:

Table 2 - North Springs Treatments (appendix D)

Treatment Type	Acres	% of Analysis Area
Phase I		
Completed by State on State lands only (2016)	2,435	≈ 3.2%
Phase II		
Treatments could include: biomass utilization, mechanical treatments, hand treatments, prescribed fire, seeding, and herbicide.	4,484	≈ 5.8%
Phase III		
Treatments could include: Fire wood utilization, mechanical treatments, hand treatments, prescribed fire, seeding, and herbicide.	3,782	≈ 5%
Timber Harvest Area		
Area will be used primarily for public biomass utilization	91	>1%
Project Total	10,791	≈ 14%

Future phases of treatment may be proposed within the analysis area. Treatment type and location information will be added to the ePlanning website and administrative record to ensure the public is kept informed and records are kept throughout all phases of the project. Additional analysis and documentation to ensure NEPA compliance will be completed prior to implementation. An Archaeological Report (Class III) may be prepared for future phases, and information documenting the archaeological inventory and compliance with the National Historic Preservation Act (NHPA) of 1966, as amended, will be on file in the Canyon Country Fire Zone office. Sites identified and determined to be eligible for the National Register of Historic Places (NRHP) will likely be avoided during the mechanical treatment portion of the project, unless treatment options are such that it would be beneficial to the archaeological resource to treat the vegetation on site. Tribal groups have been requested to identify traditional cultural properties or any other areas of traditional cultural importance to be considered within proximity of the project.

Treatment Design and Methodology

The goal of treating dense pinyon-juniper is to reduce the fuel hazard while restoring ecosystem health by re-establishing the natural variability, stability, and diversity of the vegetative community within the project area. In designing a specific fuel treatment prescription, techniques for reducing crown fire occurrence and severity may include (1) increasing canopy base height, (2) reducing canopy bulk density, (3) reducing forest canopy continuity and (4) reducing surface fuels.

Proposed treatment activities would involve hand cutting and piling; hand cutting with lopping and scattering of slash; mechanical shredding; seeding; prescribed fire; herbicide control; biomass utilization; and kiosk installation. Woody surface materials and ladder fuels considered to have hazardous fuel potential would be cleared and scattered. Untreated islands of trees and buffered areas would be left in a mosaic pattern throughout the proposed treatment area to benefit wildlife and improve ecosystem function. Prescribed fire would be used in addition to and as a complement to mechanical treatments and would include pile burning as well as broadcast burning.

Due to the unique and often irreplaceable ecological values that old-growth stands provide for animal and plant habitat, genetic diversity, and long-term climate records (Kaufmann et al. 1992; Miller et al. 1999) old-growth trees would be avoided (appendix F; RMP FOR-6 p. 97).

There are several drainages within the collective project boundary in which treatment methods may be modified to protect prospective or existing aquatic or riparian resources. Canyons and drainages are areas most frequented by wildlife species and because drainages are also valuable components of the watershed, care will be taken to establish vegetative buffer zones (generally feathered and 100'-200') at the head of drainages and along ridge tops to enhance raptor habitat and provide for watershed integrity. Fuel reduction efforts in primary canyons and drainages would focus on reducing pinyon-juniper and invasive non-native plant species such as tamarisks.

Before project implementation standing timber in selected areas may be made available for wood harvest or cedar posts. Cedar posts will be left in 8 foot lengths. In select areas, slash and debris from fuel management activities along designated roads or other accessible areas may be made available to the public by permit for wood harvest. Permits and maps with available wood harvest areas will be available through the BLM Price Field Office (RMP p. 97 FOR-4 & 8).

Any new routes created during project work occurring within treatment areas would be rehabilitated to prevent further use by off-highway vehicle (OHV) users. Some areas would require rehabilitation techniques where appropriate, such as mechanical shredding, mechanical seedbed preparation, seeding, and the installation of signs stating 'closed to motorized vehicles' to prevent OHV use until the evidence of tracks is obscured by vegetation.

Standard Operating Procedures, Best Management Practices for Fuels Management Activities, and Herbicide SOP's are attached (Appendix G) and incorporated into this proposed action along with Best Management Practices for Raptors and their Associated Habitats in Utah (PFO RMP Appendix R-5).

Surface disturbing activities of the proposed action include the operation of bull hog and the operation of vehicles and equipment off designated roads. In order to be in conformance with the Price RMP these activities will not be conducted on slopes greater

than 40% (PFO RMP R-3). Activities not considered to be surface disturbing, such as manual treatment by hand crews would not be restricted by slope.

Mechanical Treatment

Where soils are deeper and at higher elevations where moisture is more favorable to tree growth there are stands of extremely dense pinyon-juniper growth. Dense pinyon-juniper presents a challenge both from a fuel hazard perspective and as an impediment to restoration. Crown fire potential in these areas is significant because of canopy closure along with an abundance of dead woody fuels remaining on the surface. In accessible dense stands with flat terrain (less than 40% slope) and in areas where rocky outcrops are minimal, a mechanical chipper/shredder or “bullhog” would be used to achieve treatment goals. A bullhog “mechanically shreds” both green and dead trees as well as ladder fuels, scattering the remaining chipped materials (mulch) over the ground and redistributing the fuel load. A recent study shows that understory cover in mastication treatments was 15 times greater following two growing seasons, compared to untreated controls (Ross, Castle and Barger, 2012). Mulched material generated from bullhog treatments would eventually decompose, although future follow-up treatment with prescribed fire could be used in some areas to reach desired wildland fire condition. Units targeted for mechanical treatment and treatment design would be determined through coordination between the fuels staff and Price Field Office resource staff.

Manual Treatment

Manual thinning is typically used in areas not suitable for mechanical treatment such as steep, rocky slopes and areas that require mitigation such as cultural or riparian. Selected portions of the proposed treatment area would be hand-cut and thinned with chainsaws by BLM and/or contract crews or through the use of Stewardship contracts. Open areas in the pinyon-juniper would be created to mimic naturally-occurring gaps in size and spatial patterns. In units where stand densities are low and existing surface fuels shallow, hand crews could cut and scatter fuels over the ground for follow-up surface burning. In sparsely vegetated areas, scattered slash and debris would be left intact for soil stabilization and use by small mammal and reptile species.

While scattered fuels retain the surface fuel load necessary for future prescribed fire maintenance, the immediate fire threat is reduced because potential flame height and rate of spread are inhibited by the dispersion of fuels. In some of the more dense stands, hand-cut materials may be piled in specific areas to avoid scorching of live trees. Piles would be located at least ten feet from any green trees and natural openings of cleared vegetation would be utilized for pile placement in an effort to minimize scorch or mortality to residual vegetation. As in the cut and scatter method of fuels reduction, piling of cut materials redistributes the fuel load for future follow-up burning. Vegetation removed through all methods would be selected based on hazardous potential, restoration goals, and retention of the existing character of the landscape. Thinning of living, diseased and other trees would occur in selected areas to decrease stand density while giving consideration to wildlife habitat.

Prescribed Fire

Broadcast burn and/or pile burning follow-up treatments would be planned for late fall, winter, or spring periods when fuel and site moisture conditions were high, to avoid fire damage to adjacent vegetation. A detailed burn plan would delineate weather and fuel moisture conditions required to meet fuels reduction and resource objectives. Ignition of the burn would be conducted by hand (drip torches using a diesel/gasoline mixture), aerial ignition, or by truck-mounted terra torch (utilizing a gasoline/alumagel mixture). Aerial ignition would include Plastic Sphere Dispenser (PSD) and/or helitorch operations. Helitorches can produce more heat and are useful when weather conditions are moist and cool or when burning damp fuels. PSD burning is more efficient under drier, warmer conditions. A combination of both methods can be used if there are widely varying fuel and moisture conditions throughout the units.

During the burning of debris, natural and man-made barriers (i.e. hand line or mechanically constructed) and/or an established wetline could be used as control lines. Smoke management would consist of burning when clearing indices comply with Utah Smoke Management Plan guidelines, in order to reduce localized haze and smoke inversion and to provide for maximum smoke uplift and dispersal. To prevent cumulative air quality impacts from simultaneous treatment projects or wildland fires, any portion of the proposed project involving burning would undergo interagency cooperation and consultation prior to implementation.

The use of fire in sagebrush parks can force a conversion to grassland, which would be of detriment to habitat value. For this reason, treatment of sagebrush areas would consist only of manual cutting and piling or mechanical shredding. Any piled material would be burned under conditions which minimize fire spread and damage to the sagebrush community.

Seeding

Units within the entire project area may be seeded following or prior to treatment with both native and selected non-native grasses, forbs and browse species. Seed selection would be determined through collaboration with resource specialists and from monitoring results in similar vegetative communities. Seed selection (appendix J) would also be based upon the most current data regarding the establishment of species likely to promote successional changes toward the desired vegetative community.

Seeding would be accomplished with a broadcast spreader or harrow dragged behind an ATV, tractor or dozer, through the use of a rangeland drill, or by aerial methods. Seeded portions of the treatment area would be rested from grazing for a minimum of two growing seasons following seeding (Rangeland Health Standards and Guidelines Appendix R-7 pg.4 #13 PFO RMP). Livestock would be kept out of pastures with the use of existing pasture barriers (fences and topographic barriers) in most areas, or new fencing could be required to create pastures in some areas. In the event a single pasture contained several seeded units the pasture could be closed for use entirely until treatment goals were achieved. Treatments would be scheduled over several years to avoid cumulative impacts

to grazing permittees. Cattle could be allowed in the area of the proposed action sporadically during the treatment timeframe.

Herbicide

In cheatgrass monocultures and in existing sagebrush stands where perennial species are lacking and cheatgrass is present in the understory, herbicide may be necessary. In general, current cheatgrass populations in the project area are a secondary component of the composition in the vegetative communities. Herbicide control would be in response to cheatgrass response post vegetation treatment that may negatively influence rehabilitation efforts. To control cheatgrass, imazapic may be applied either aerially or by ground. Imazapic may be used to treat degraded rangeland in need of re-vegetation. Areas selected for herbicide application would be treated according to manufactures label.

Herbicide application would be carefully recorded and documented. Herbicide use information would be reported to the BLM Utah State Office and the BLM Washington Office. A pesticide use proposal (PUP) would be prepared and approved by the BLM Utah State Office prior to application of the herbicide. The BLM MFO would follow the applicable standard operating procedures (SOP's) for applying herbicide as listed in the Record of Decision Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic EIS.

Kiosk Installation

Disseminating information to the public on project intentions, goals, objectives and successes is a vital part of healthy ecosystem education. One of the major ways to present this information is by using Kiosks located in or around the project area. Kiosk size depends on the amount of space needed to convey the fuels treatment message. Kiosks generally measure approximately 8' tall x 4' wide. Installation requires digging two post holes (2-3' deep) using an auger and cementing two 4" x 4" posts permanently into place.

Monitoring/Maintenance

Collaboration between agencies is a critical step in adaptive management of vegetative communities in southeastern Utah. The Canyon Country Fire Zone has taken the lead in an effort to combine datasets such as past fire occurrence and fuels treatments with newer treatment data from cooperating agencies in southeastern Utah to create a comprehensive look at collective activities on a landscape scale. Monitoring of treatments including documentation of seeding success in sagebrush parks is invaluable in planning for future sagebrush/grassland treatments. Transects and/or photo plots to document fuel load and vegetation composition may be established for this treatment, both before and after mechanical treatment as well as prescribed burning.



Figure 2 - Kiosk Example

Research and monitoring results would be incorporated into management decisions regarding future resource treatments that could include maintenance burning, additional seeding, additional mechanical treatments, and/or other actions. Management decisions requiring treatments not previously analyzed could initiate further environmental assessment.

Follow-up maintenance of treated areas will be done on an as needed basis and as funding and timing allow. Follow-up maintenance usually consists of lopping pinyon and juniper saplings, herbicide applications for noxious weeds and invasive species and prescribed fire.

In addition to fuels monitoring, post treatment monitoring of cultural resources will be conducted.

Desired Future Condition and Project Results

The desired outcome of the project would include: 1.) Enhance and expand sagebrush and grassland-steppe habitat; improving soils, increasing forage and improving habitat for GRSB, wildlife and livestock while preventing and discouraging the spread of invasive plant species. 2.) Reduction of the continuous tree canopy to decrease the probability of resource damage from a high-intensity, stand-replacing wildland fire; 3.) the re-establishment of vegetative diversity, vigor, and resilience, resulting in better forage and habitat for wildlife and livestock; 5) a return to a more historic fire regime where low-intensity fire can be utilized to maintain the health and vigor of the vegetative community.

2.3 Alternative B – No Action

No management action involving fuels treatment would occur to reduce fuel loads or to change the current vegetative condition. Suppression of wildland fire would continue under the current policy, and management of other resources in the area would not change. Future reactive actions such as emergency stabilization and rehabilitation could be applied in response to wildland fire, but no further proactive fuels treatments would be implemented in the near future to reduce the threat from wildland fire to improve watershed conditions, or to enhance forage and wildlife habitat in the area of the proposed project. Fuel loading would continue to increase due to juniper expansion and infilling which would lead to loss of ecosystem function. Fire threat to Sage-Grouse habitat, WUI areas, cultural resources, sagebrush communities, watersheds, elk and mule deer winter range would remain high.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified in the Interdisciplinary Team Checklist found in Appendix A and presented in Chapter 1 of this assessment. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4.

3.2 General Setting

The project area is located in the North Springs area of Carbon County. North Springs is located west of Highway 6 and northwest of Price, Utah. The project is located entirely within Carbon County. During the early 1880s the Denver and Rio Grande Western Railroad, seeking a route from Denver to Salt Lake City, discovered and opened up the vast coal lands of Carbon County and coal mining became a major catalyst for development in the county. In 1894 the territorial legislature created Carbon County from a portion of Emery County. Coal mining continues to play a vital role in the county's economic and social development. Carbon County covers about 950,400 acres and according to a resource assessment compiled by the USDA Natural Resources Conservation Service and the Utah Association of Conservation Districts (August, 2005), there are approximately 10,500 irrigated acres of crops throughout the county. The resource assessment notes in their general land observations that the control of noxious and invasive plants is an increasing problem as is poor pasture condition. According to the Carbon County Master Plan (2004 Revision), "...of over four million dollars in gross receipts for livestock in Carbon County in 2002, nearly three million were realized from stock that graze on public lands all or part of the year." Because the county's highly saline groundwater is unusable, Carbon County relies heavily on water from the Price River for agricultural as well as other uses. For these reasons, watershed protection is a high priority and an ongoing challenge (Utah Governor's Office of Planning and Budget, "Carbon County Profile," December, 2003).

Carbon County is considered to be a semi-desert climate in spite of fairly high elevations. The elevation in the general area ranges from 5,417-7,661 feet. Yearly average temperatures range between 12 and 89 degrees. Precipitation averages 10-14 inches annually. The county has a significant amount of BLM, Forest Service, and State of Utah lands, and is bordered on the north by the Book Cliffs and Ashley National Forest, and on the west by the Manti-La Sal National Forest. The steep ridges and canyons of the Book Cliffs rise 3,000 vertical feet in 10 miles from the floor of the valley, and the rugged area is habitat for some of the highest wildlife numbers in the state including elk, deer, bighorn sheep, black bear, mountain lion and moose. Land ownership is broken down in the chart below:

Table 3 - Carbon County Land Ownership

Carbon County Land Ownership (acres)		
Land Owner	Number of Acres	Percentage of Total
BLM	418,000	44
USFS	30,000	3
State	125,000	13
Private	373,000	40

Total	946,000	100
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*Information found in Price Resource Management Plan (2008)

Fire occurrence and size varies from year to year in this area depending on the amount of moisture associated with lightning-producing thunderstorms. Pinyon and Juniper woodlands and surface fuels are the primary fire carrier in the area, with high fire intensity a direct result of high stand density and weather conditions. Portions of Utah have been experiencing intermittent drought conditions over the past decade which have depleted both soil and fuel moistures in drought years. Drought stress can increase vulnerability to insects and disease, and persistent low fuel moistures increase tree flammability. Combined, this vulnerability increases the probability of high intensity fire. A hot, intense wildland fire occurring in this particular area could create unstable slopes, damage watersheds, increased erosion and/or sedimentation, charred soils and vegetation, loss of crucial habitat, and possible economic loss.

3.3 Resources/Issues Brought Forward for Analysis

3.3.1 Fuels/Fire Management

Outdated livestock grazing management practices combined with an aggressive fire suppression program, several continuous years of drought and invasive cheatgrass have influenced the natural fire regime within the proposed project area. Most fires were started by lightning and burned in large patches creating a mosaic of open meadowlands. Throughout the area, these historic low-intensity fires prevented the build-up of high density fuels by periodically clearing away brush, small trees, and dead and downed trees.

Presently, the dominant vegetation in the area is pinyon juniper, cheatgrass and decadent sagebrush. A successful treatment in this area would result in fire moving from the tree canopy to the ground through reduction of a continuous canopy. Fire would then spread through perennial grasses, forbs and shrubs, burning at a lower intensity and resulting in safer and more efficient fire control.

The proposed action falls within FMU 3-West Benches (74,410 acres), FMU 4-Price Urban (141 acres) and FMU 99 –Other (2,228 acres).

FMU 3-West Benches

This FMU is the bench areas to the west and northwest of Price and Huntington. The majority of the land is either in private ownership or managed by the State of Utah. The FMU borders the Manti-La Sal National Forest on the west side. The primary vegetation types include: crested wheat grass and sagebrush with pinyon-juniper invading in the chained areas. Topography consists of mid-level benches. Elevations range from 6500'-8500'. This FMU has an average of 4 fires and 55 acres burned annually. Communities and/or infrastructure at risk within this FMU include Aspen Cove, Beaver Creek, Clear Creek, Hiawatha, North Spring, Scofield, and Scofield Mountain Homes. Values at risk within the FMU are extensive private land holdings, key winter ranges and mining facilities.

FMU 4- Price Urban

This FMU covers the highway corridors from Price Canyon to Interstate 70. The majority of this land is private owned. The primary vegetation types is grass and desert shrub with some scattered PJ. Topography in the area is mostly valley floor with the exception of Price Canyon, which is a narrow “V” shaped canyon. This FMU is generally a low fire occurrence area with an average of 3 fires and 325 acres burned annually. Recent large fires in the area are the 3,500-acre Price Canyon fire in 2002. Communities at risk include: Price, Helper, Huntington, Orangeville, Castle Dale, Ferron, Emery, Moore, Wellington, Carbonville, Cleveland and Spring Glen. Values at risk within this FMU include: WUI areas, Price Canyon, Highway corridors, railroads and utilities.

The FMP recommends fuels management strategies such as prescribed fire and mechanical and/or other types of treatment to reduce hazardous fuel conditions and increase high value browse and herbaceous production (Canyon Country Fire Zone FMP, page 23, 26). Since 1981 the analysis area has had 76 documented fires burning a total of 733 acres (appendix G).

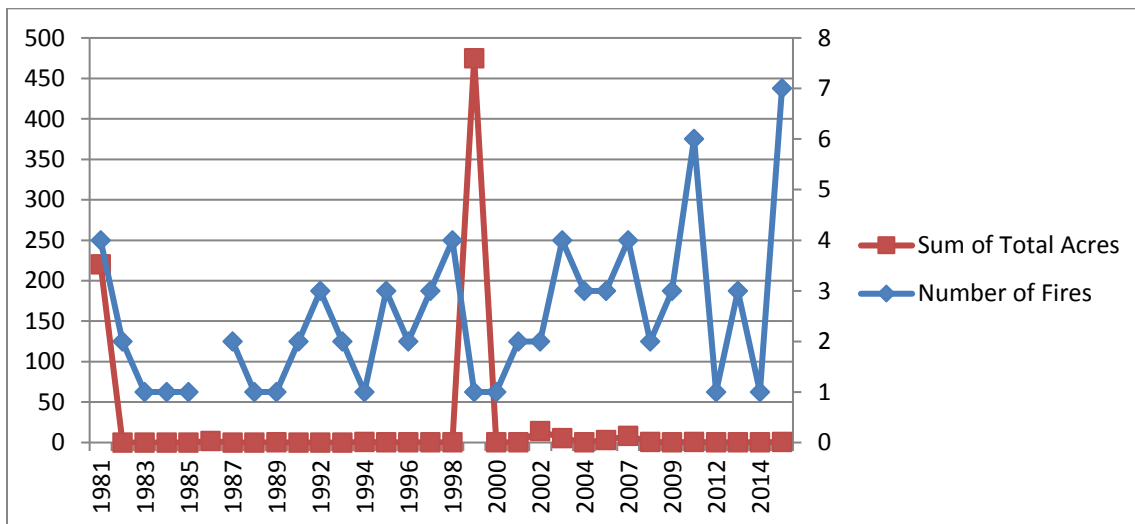


Figure 3 - Fire History Within the North Springs Analysis Area Since 1981

3.3.2 Livestock Grazing

The proposed project area is within the boundaries of ten grazing allotments (listed below). There are eight grazing permittees authorized to graze cattle and sheep within the project area as shown below (Table 4). The permittees own or lease private land within the allotments and lease state land within the allotments. The allotments are physically divided from each other by fences or natural barriers.

Livestock seldom utilize the areas proposed for treatment for foraging opportunities due to a scarcity of forage and minimal water sources. Existing range improvements in the project area include stock ponds, fences and developed springs. These range improvements may occur in proposed treatment areas.

The most recent Rangeland Health Standards assessments indicate that the majority of the allotments are meeting all rangeland health standards including soils, sensitive species habitat, riparian/wetland areas and clean water. The Mudwater Allotment is not meeting rangeland health standards due to the Seeley wild fire in 2012.

There are a total of 180 allotments administered within the Price Field Office. Livestock use is managed through Grazing Permits, which establish terms and conditions regarding grazing numbers, duration of use, and timing of livestock use. Livestock use is measured through Animal Unit Months (AUMs), which generally equates to the amount of forage necessary for the sustenance of one cow for a period of one month.

Of these 180 allotments, the proposed North Springs project falls within the following 10 allotments:

Table 4 - Grazing Allotments within the North Springs Analysis Area

Allotment Name	Livestock Numbers	Grazing Season	Percent Public Land	Active AUMs
Consumers Wash	54 S 470 S 109 C	10/1-6/20 4/21-6/20 4/21-6/20	100%	439
Fausett	53 C	3/1-5/31	10%	16
Gordon Creek Withdrawl	99	5/1-6/30	25%	50
Haley Canyon	21	5/16-10/31	100%	117
Hiawatha	36	4/16-5/31	100%	54
Long Bench	110	5/1-10/31	3%	20
Mudwater	32	7/15-8/31	30%	15
North Springs	Not Currently Permitted			
Pinnacle Bench	345 S 18 C	5/1-6/30 11/01-12/15	100	92 27
Porphyry Bench	26 S 7 S 6 C	4/16-5/31 4/16-6/20 10/01-11/15	100	39 15 27
Wattis	18 C	5/01-9/30	45	41

The majority of the allotments listed in the table above contain acres outside the project boundaries, and have private land within their boundaries that is used in conjunction with BLM administered lands for livestock grazing purposes.

3.3.3 Vegetation: Invasive Species/Noxious Weeds

The expansion of invasive species on public lands, along with the build-up of hazardous fuels, are a major threat to ecosystem health, and one of the greatest challenges in managing vegetation on public lands administered by the BLM. Because the spread of invasive plant species is one of the factors leading to the degradation of watersheds, the improvement of watersheds and water resources through vegetation treatments to control populations of non-native and invasive species is of primary importance in land-use planning. In the year 2000, the BLM estimated that approximately 36 million acres of BLM-administered public lands are infested with weeds, spreading at a rate of 2,300 acres each day (17 States Herbicide PEIS, Page 66).

Non-native plant invasion is one of the most important issues facing land management agencies today because of the ability of invasives to permanently alter ecosystems. Annual invasive species are interspersed throughout both public and private lands in the project area as well as on lands surrounding the project area. Halogeton or saltlover (*Halogeton glomeratus*), prickly Russian thistle (*Salsola tragus*) and cheatgrass (*Bromus tectorum*) are invasive species that are present within the project area. The previously mentioned invasive species occur along the main roads, within the barrow ditches adjacent to the main road, in isolated patches along the fence lines and in other disturbed areas such as user created trails. There are known noxious weed infestations which include tamarisk (*Tamarix spp.*), Russian olive (*Elaeagnus angustifolia*), houndstongue (*Cynoglossum officinale*), hoary cress (*Cardaria draba*), and musk thistle (*Carduus nutans*) within the project area. Noxious weed control is currently taking place within the project area on well pads and roads associated with the well pads, in the Seeley Fire burn area and along streams throughout the project area.

3.3.4 Vegetation: Excluding USFWS Designated Species and BLM Sensitive Species

Native vegetation presently occurring in the project area consists of pinyon and juniper, Wyoming big sagebrush, Indian ricegrass, needle and thread, blue grama, scarlet globemallow, and other minor grasses and forbs. In the mid to late 1960's several thousand acres within the project area was treated to remove Pinyon/juniper and sagebrush. These areas were seeded with a mix of crested wheatgrass, Russian wildrye and fourwing saltbush. These seeded areas still contain a fair stand of crested wheatgrass, and Russian wildrye. The proposed action will focus mainly on areas where Utah juniper and pinyon over story is dense with minor forbs and grasses present in the understory.

An ecological site (ESD) is generally considered an area of land with specific physical characteristics that produce a distinctive type and amount of vegetation. ESDs contain an interpretation of major plant species, composition, cover, and dynamics as well as soils, precipitation patterns, elevation, and topographic information, and are often utilized to formulate adaptive management actions desired future condition for range,

wildlife, and/or hazardous fuel treatments. The dominant ESDs within the project area that are subject to treatment are the Upland Loam (Big Sagebrush) ESD, the Upland Loam (Wyoming Big Sagebrush) and the Upland Shallow Loam (Pinyon – Utah Juniper) ESD.

3.3.5 Vegetation: Woodlands/Forestry

The BLM managed woodlands and forestry within the project area are primarily mixed stands of Utah juniper (*Juniperus osteosperma*), both singleleaf and two-needled pinyon (*Pinus monophylla* and *Pinus edulis*), and a few species of higher elevation timber, like Douglas fir (*Pseudotsuga menziesii*) and Aspen (*Populus tremuloides*). The majority of the proposed treatment area is persistent pinyon-juniper woodland where tree density and canopy cover have increased over the past 100 years. Persistent pinyon-juniper woodlands are generally composed of same-age or limited-age classes of trees (100-300 years+) often growing on rugged upland areas with shallow, coarse-textured soils supporting minimal understory. The current vegetation composition within the proposed treatment area is dominantly a mature 80 to 100 year-old pinyon/juniper stand. The natural fire regime in the area has been altered as a direct result of fire suppression practices. The proposed treatment area is not within a designated and approved fuelwood harvest area or Christmas tree harvest area, however other special forest products such as piñon pine nut collection is available within the project area.

In southeastern Utah, woodlands are primarily mixed stands of Utah juniper (*Juniperus osteosperma*), also known as cedar trees, and two-needled pinyon pine (*Pinus edulis*). The principle forestry uses for these woodlands by the public are for firewood collection from pinyon and junipers, Christmas trees from pinyons, and fence posts from juniper trees.

3.3.6 Soils

The proposed project area is contained within the Soil Survey of Carbon Area, Utah, Parts of Carbon and Emery Counties (NRCS, 2016) and the Soil Survey, Manti-Lasal National Forest, Manti Division – Parts of Sanpete and Emery Counties (NRCS, 2013). Approximately 38% of the project area is encompassed by six soil mapping units. The remaining 62% is encompassed by 49 soil mapping units. These units are explained in detail in the Custom Soil Resource Report for Carbon Area, Utah, Parts of Carbon and Emery Counties; and Manti-Lasal National Forest, Manti Division – Parts of Sanpete and Emery Counties. This custom report has been incorporated by reference and been used extensively for analysis purposes.

The following is a summary of the primary soil map units for the proposed action:

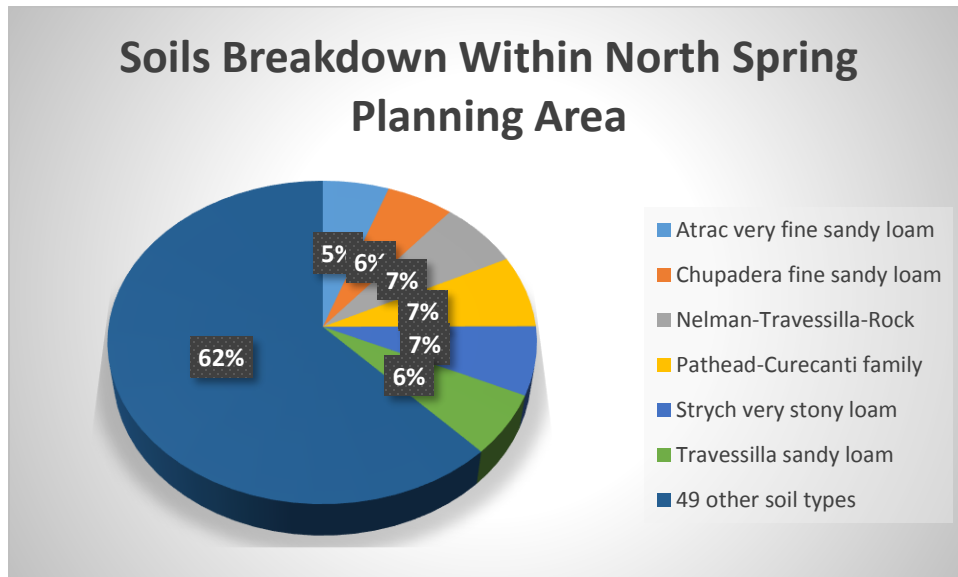


Figure 4 – Soil Breakdown within the North Springs Planning Area

Biological Soil Crusts

In arid and semi-arid regions where vegetative cover is generally sparse, open spaces are often covered by biological soil crusts. These crusts are highly specialized communities of cyanobacteria, green algae, mosses, lichens, microfungi, and other bacteria. Formed by these living organisms and their by-products, they create a surface crust of soil particles bound together by organic materials. The crusts promote soil stability, nitrogen fixation, nutrient contributions to plants, soil-plant-water relations, infiltration, seedling germination, and plant growth (Belnap et al., 2001). Biological soil crusts are usually darker than the surrounding soil, due in part to the density of the organisms and to the often dark color of their cyanobacteria, lichens, and mosses. These organisms swell when wet, migrating out of their sheaths. After each migration new sheath material is exuded, thus extending sheath length. Repeated swelling leaves a complex network of empty sheath material that maintains soil structure after the organisms have dehydrated and decreased in size (USGS, 2006). Sheath material is apparent as a marked increase in soil surface roughness, often referred to as pinnacles or pedicles.

Biological soil crusts are typically found on barren soil in plant interspaces and near shallow and surfacing bedrock. Biological soil crusts are not present on bedrock exposures, cliff faces, or talus slopes where no soil is present. Biological soil crusts are present in the proposed project area, their distribution and development influenced by many factors including soil texture and depth, plant cover and management activities. Biological soil crusts are fragile and are severely damaged or destroyed by surface disturbing activities. There is no inventory data to indicate the distribution and development of biological soil crusts for the project area.

3.3.7 Water: Hydrologic Conditions

The project area is interspersed with small storm driven washes that are generally dry throughout most the year. There are numerous natural gas well pads throughout the area and are mostly protected against runoff or erosion. Surface flow is generally to the east with flows that are storm driven or from spring runoff. Run off is light due to the topographic trend, dry climate, and short slopes.

Gordon Creek, and the North and South Forks of Gordon Creek as well as Pinnacle Wash flow across the northern portion of the project area. Gordon Creek carries perennial flows while Pinnacle Wash is storm driven or carries spring runoff.

On June 27, 2012, a lightning strike in Huntington Canyon area developed into a 47,588 acre fire known as the Seeley Fire. Subsequent storm events produced massive flooding, increased sediment loads in the Gordon Creek and Porphyry Wash. This scoured the stream beds to bare rock in many places. The burn area is still recovering and it is predicted the surface water will carry heavy sediment and debris for years to come.

Serviceberry Creek and Miller Creek flow across the central part of the project. These are generally dry at this location and carry only storm driven flows or spring runoff.

3.3.8 Water: Surface Water Quality

Gordon Creek has been listed on Utah's 303d list since 2004 due to total dissolved solids (TDS) concentrations. TDS is a measure of combined inorganic and organic substances in a liquid in molecular, ionized, or colloidal form. Generally, the definition of TDS is that of suspended or dissolved solids that can pass through a 2 micron filter. The concentration of TDS was exacerbated by the Seeley Fire in 2012 which loaded the stream with high concentrations of sediment and the accompanying TDS. The loading from the Seeley Fire is predicted to continue for years to come.

The project area drains mostly into Price River-3. This section of the Price River is listed on Utah's 303d list for TDS as well.

3.3.9 Wildlife:

The proposed project analysis area covers 76,779 acres with a variety of habitat types that are important for many wildlife species. Habitat provides cover, feeding, roosting, breeding, nesting, and refuge areas for a variety of wildlife species including migratory birds, many species of raptors and bats, wild turkeys, elk and mule deer and various small mammal species.

Each wildlife species within the Price Field Office area requires a specific set of habitat conditions in order to meet their particular needs for survival and reproduction. Different plant communities at different stages growth are also important in providing habitat requirements. As plant communities move through transitional stages, habitats are occupied by different wildlife species. For the purpose of this EA, special interest species and general groups of species that are more common will be discussed in detail which will generally indicate the effects of other species that utilize the area.

Greater Sage-Grouse (BLM Sensitive Species)

The Greater Sage-Grouse (GRSG) is an important game bird found in Utah. These birds inhabit sagebrush plains, foothills, and mountain valleys. Sagebrush is the predominant plant component for quality habitat. Factors involved with the decline in both the distribution and abundance of GRSG include permanent loss, degradation, and fragmentation of sagebrush-steppe habitat throughout the western states, including Utah (Braun 1998). Documented severe population declines (approximately 80%) occurred from the mid-1960s to mid-1980s. It has been estimated that at least one-half of the original area occupied by GRSG is no longer capable of supporting this species (Braun 2002). It is also estimated that the species is one-half as abundant as it was prior to 1850 (Beck and Mitchell 1997). On March 5, 2010, the USFWS determined that the GRSG warrants protection under the Endangered Species Act; however, the USFWS concluded that proposing the species for protection is precluded by the need to take action on other species, therefore the GRSG became a candidate species. In 2015 USFWS found that the GRSG is no longer warranted and the bird was removed from the candidate species list. This finding was based on cooperative conservation efforts, GRSG management plans, and available scientific information. Research and conservation efforts in the last 20 years have helped stabilize and recover many populations. Populations appear to have taken a positive turn in recent years (UDWR 2009; WAFWA 2015).

Sage-Grouse have declined throughout their range and now inhabit 56 percent of their historic range, which covered nearly 500,000 square miles of habitat across 13 western states and parts of Canada (Schroeder et al. 2004). In Utah, the total number of males counted increased substantially, tracking the exponential increase in efforts to find new leks in the last 15 years. While there sometimes is a bias to count active leks, referring to the average number of males counted on active leks can be a more accurate means of determining trends. The average number of males per active lek declined between 1969 and 1996 but appears to have stabilized between 1996 and 2012. State trends may not reflect more localized population trends, as Utah populations are highly varied in terms of historic and current threats, topographic/geologic diversity (including natural fragmentation), and precipitation patterns.

Several factors, past and current, contribute to the changes in GRSG distribution and abundance, including habitat loss, alteration, and degradation. The negative impacts on GRSG from various types of habitat fragmentation include reductions in lek attendance and persistence, winter habitat use, recruitment, yearling annual survival, and female nest site choice (USFWS 2010). Several of the major causes of GRSG habitat loss range-wide include energy development, infrastructure, fire, invasive plants, conifer expansion, and improper livestock grazing. Within the planning area, the primary threats include wildfire; spread of invasive plants; conifer expansion; improper grazing; localized predation that exceeds natural rates or species that GRSG evolved with; localized wild horse impacts; and, in the eastern part of the planning area, infrastructure primarily associated with oil and gas development (USFWS 2013)

The majority of the project area is identified as occupied habitat by Utah Division of Wildlife Resources (UDWR) and is not classified as winter or brood-rearing habitat. The treatment would cover 8,382 acres of the area identified as occupied. Although the area is identified as occupied according to UDWR habitat boundaries there has been no evidence of use in the project area by GRSG in recent history. Of the 8,382 acres, approximately 4,275 fall within a General Habitat Management Area (GHMA) and 4,107 fall within Priority Habitat Management Area (PHMA) as designated by the BLM (BLM 2015).

Big Game (Mule Deer and Elk)

Mule deer occupy most ecosystems in Utah, but are characteristically found in shrublands with rough, broken terrain and abundant browse and cover. Mule deer winter diets consist primarily of browse in the form of sagebrush, bitterbrush, mountain mahogany, and other shrubs, as well as a small amount of grasses and trees. Rocky Mountain Elk can be found throughout Utah and utilize a variety of habitat types throughout the year. Sedges, grasses and forbs comprise most of an elk's diet. Elk also eat shrubs during the winter, but have an advantage over deer in that they are able to eat a greater variety of plants.



Mule Deer



Rocky Mountain Elk

The proposed treatment area is within crucial mule deer and elk winter habitat. Treatment activities could take place throughout approximately 63,684 acres of crucial elk winter range and 75,628 acres of mule deer winter range as designated in the RMP for the Price Field Office (Appendix I). The area also provide spring/fall transition range for mule deer, which is important especially during fawning. “Crucial winter range” is considered to be part of the habitat necessary to sustain a wildlife population at critical periods of its lifecycle. This is often a limiting factor on the populations such as breeding habitat, winter habitat, etc. Winter range habitat primarily consists of shrub-

covered, south-facing slopes and is often considered a limiting factor for mule deer and elk in the intermountain west.

Because of learned behavioral use patterns passed on from one generation to the next, deer and elk migrate for the winter into the same areas every year, regardless of forage availability or condition. These are generally areas lacking in snow depth which allows for easier movement, within pinyon-juniper and sagebrush vegetation types that provide forage as well as escape and thermal cover.

4.0 ENVIRONMENTAL IMPACTS

4.1 Introduction

This chapter provides a summary of the environmental impacts of the proposed action and the no-action alternative. The discussion of environmental impacts focuses on how the proposed action and no action alternative meet the purpose and need and address key issues. The issues evaluated here were determined by the responsible officials to be the key issues related to the proposed action, based on feedback from agency specialists, the public and cooperating partners.

4.2 Direct and Indirect Impacts

Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

4.2.1 Alternative A – Proposed Action

4.2.1.1 Fuels/Fire Management

According to accumulated research results, the most effective strategy in fuel management is thinning of vegetation followed by prescribed fire, piling and burning, and/or mechanical treatment. These activities reduce canopy, ladder and surface fuels and can reduce both the intensity and severity of wildland fire (RMRS-GTR-120, page 27). The proposed action would result in the reduction of regenerative pinyon-juniper and the elimination of slash debris from cutting and dispersal of live trees and brush. A successful project would reduce the potential for high-intensity wildland fire while restoring natural ecological processes. A subsequent increase in vegetative diversity and woodland productivity would be expected, with greater availability of soil moisture and lower evaporation rates over the long term from a gradual increase in vegetative understory species. The production of understory grasses and forbs is known to decline as crown cover increases in pinyon-juniper woodlands (Arnold et al., 1964). In reducing the overstory, research shows that at least two-thirds of the crown cover must be removed to achieve a substantial increase in the growth of understory vegetation (Fowler and Witte, 1987). Vegetation that has proven to quickly respond to this type of reduction in pinyon-juniper includes various grasses that flourish from reduced competition from overstory junipers. Research results show additional benefits of increased herbaceous biomass from livestock rest following treatment.

Fuels/Fire Management Collective Treatment Area

Manual Treatment

While scattered fuels retain the surface fuel load necessary for future prescribed fire maintenance, the immediate fire threat is reduced because potential flame height and rate of spread are both inhibited by the dispersion of fuels. Piling of hand-cut slash for future follow-up burning similarly reduces the immediate fire threat through redistribution of the fuel load.

Mechanical Treatment

Mechanical mastication treatments do little to affect surface fuels with the exception of compacting and crushing vegetation, and may have the potential to increase surface fire

spread and fireline intensity due to fine-wood surface loading from the mulch (Raymond and Peterson, 2005). Spread and intensity can present fire-control issues in the event of a wildland fire following treatment, and high temperature surface fires have the potential to damage soils and new vegetation. The potential to increase surface fire is decreased when mechanical treatment is followed by prescribed fire to remove the resulting fine fuels. However, even if a wildland fire occurs in a mechanically-thinned area, research shows that the fire would be easier to control than a crown fire in an untreated area (Resh et al., 2007). Consequently, overall impacts from a wildland fire following mechanical treatment may be lower in spite of higher surface fuels because less acreage would be expected to burn than in a crown fire situation.

The reduction of closed-canopy pinyon-juniper and decadent sage from this project would decrease the potential for a crown fire, causing fire to move from the tree canopy to the ground through reduction of a continuous canopy. Fire would then spread through perennial grasses, forbs and shrubs, burning at a lower intensity and resulting in safer and more efficient fire control.

A recent study shows that understory cover in mastication treatments was 15 times greater following two growing seasons, compared to untreated controls (Ross, Castle and Barger, 2012).

Prescribed Fire Treatment

The benefits of altering fuel structure and wildfire behavior through prescribed fire have been observed and reported for many years (Weaver 1955, 1957, Cooper 1960, Biswell and others 1973, Fernandes and Botelho, 2003; RMRS-GTR-120, page 24). Because prescribed fire is not utilized to precisely modify stand structure and composition as in mechanical thinning, there is generally less predictability of post-treatment stand structure. However, prescribed fire does influence multiple fuelbed characteristics including the reduction of fine fuels, large woody fuels and other live surface fuels, which can decrease both the spread rate and intensity of wildland fire by changing the continuity of fuels. Decreasing the horizontal fuel continuity can also limit fires to lower intensities and reduce spot fire ignitions. A prescribed fire of low to moderate severity would be expected to benefit most plant communities in the general vegetative communities found in the proposed project area by facilitating the recovery of desired species.

There are inherent risks associated with the use of prescribed fire including the possibility of promoting the spread of invasive annuals. The monitoring segment of the proposed action would instigate follow-up action if monitoring plots showed a high invasive component. Risks of prescribed fire could also involve fire escaping the established perimeter of the burn and related economic and resource damage. However, compared to the large number of prescribed fires successfully completed over the years by BLM crews in the Canyon Country Fire Zone and other state and federal agencies, escaped fires are rare.

Herbicide

Accidental spill, drift or browse from treatments could have a potential negative effect on non-target vegetation in the short term, although SOPs are in place to prevent non-target impacts to adjacent vegetation. The long-term beneficial effects of reducing noxious weeds/invasive species, understory shrub components and their hazardous fuel component would outweigh the short-term negative effects.

4.2.1.2 Livestock Grazing

In the long term through completion of the proposed treatments, the risk of severe wildland fire would be reduced and the native vegetation communities would be more sustainable. In addition, seeding would occur in areas of poor understory vegetation, thus creating an increase in available quality and quantity of forage for livestock.

Livestock grazing could be impacted by the need to rest the areas selected for seeding for at least two growing seasons. The closure of the allotments or portions of allotments could be detrimental to livestock operations that are dependent upon federal grazing allotments for livestock forage. Because livestock currently make minimal use of the dense pinyon and juniper woodland areas due to the scarcity of forage species present as well as limited water sources, restriction from the specific area of the proposed treatment would be expected to have minimal short-term impacts to livestock grazing activities. However, in the long term it is expected that vegetation would establish and thrive in the treated areas and that foraging would then resume. Beneficial long-term effects from the treatment would be expected as livestock would have a more reliable forage base and improved vegetative diversity within the affected allotments.

Because of the ability to use or create use areas or pastures within affected allotments, impacts to livestock operations from the requirement to rest seeded areas would be expected to be minimal. The proposal includes re-seeding with an appropriate seed mix that would likely promote successional changes toward the desired vegetative community. Fences may be installed in strategic locations to exclude livestock from seeded areas. These fences could be removed upon successful establishment of the desired plant community or the fences may stay in place to aid in future livestock management. Beneficial long-term effects from the treatment would be expected as livestock would have a more reliable forage base and improved vegetative diversity within the allotments. The reduction of encroaching pinyon-juniper would stimulate the regeneration of sagebrush and grasslands, enrich understory vegetation, and improve habitat. Following treatment and revegetation of the treated area, livestock could be drawn into areas seldom grazed, shifting use patterns and forage consumption. Decreasing fuel loads in the area would also have a positive impact on ecosystem and rangeland health by increasing perennial grasses and shrubs and diversifying the age class of trees within the project area.

Reducing the fuel load and continuity of heavy fuels would also decrease the potential for high-intensity fire in closed-canopy pinyon-juniper, which would benefit livestock. A severe wildland fire event could negatively affect livestock grazing throughout the allotment by reducing the amount of forage. Grazing restrictions could also be imposed due to potential Emergency Stabilization and Rehabilitation (ESR) activities.

4.2.1.3 Vegetation: Invasive Species/Noxious Weeds

Disturbance caused by the proposed action could allow for the establishment or spread of invasive species/noxious weeds by creating niches that could allow invasive species/noxious weeds to become established. Invasive species and noxious weeds are currently found within the project area. Tamarisk, houndstongue, hoary cress and musk thistle are noxious weeds currently found adjacent to the project area. Specific negative effects of invasive species and noxious weeds associated with the proposed action in the project area could include 1) reduction in the overall visual character of the area; 2) competition with, or elimination of native plants; 3) reduction or fragmentation of wildlife habitats; and 4) increased soil erosion.

Invasive species would likely continue to expand their distribution within the project area along trails from surface disturbance and mechanical transport of weed seeds from outside the area via equipment, other vehicles used and other vectors such as wind, water, wildlife and livestock movements, OHVs and humans. By implementing Best Management Plans and pre-washing equipment and vehicles, the introduction of invasive species/noxious weeds could be reduced.

There is also a risk of introducing noxious weeds from outside the project area to the project area by carrying seeds on equipment and clothing. Equipment, vehicles and clothing should be free of mud and debris to help eliminate the possibility of introducing noxious weeds into other areas. Educating trail users and signage at cutting areas would help prevent introduction or spread of invasive species or noxious weeds. The project area should be monitored at a minimum of every two years to ensure Early Detection and Rapid Response (EDRR) for the eradication of noxious weed populations that could potentially become established.

An Integrated Pest Management (IPM) plan could be developed to address any invasive species/noxious weeds that could become established as a result of this project. As part of an IPM plan, chemical control of invasive species/noxious weeds would be the preferred method of control. Only registered chemicals that are approved for use on BLM land and applied according to the label would be used.

When applying herbicides for this project, the Standard Operating Procedures, Prevention Measures and Mitigation Measures from the BLM Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on BLM lands in 17 Western States (PEIS) and Record of Decision will be followed. Chemical applications would be similar to those already analyzed in DOI-BLM-UT-G-020-2010-020-EA and DOI-BLM-UT-GOSX-2012-0057-EA.

4.2.1.4 Vegetation: Excluding USFWS Designated Species and BLM Sensitive Species

The proposed treatment within the Upland Shallow Loam (pinyon-Utah juniper) ESD is expected to result in a conversion of the tree community to an early seral stage vegetation community. Large areas of trees would be removed and grass, forb and shrub establishment would be encouraged. Treatment within the Upland Loam (Big Sagebrush)

ESD is expected to assist in maintaining the healthy shrub and grass component into the future. The anticipated plant community after treatment would provide a higher cover, variability, and density of vegetation.

An initial decrease in vegetation cover would occur immediately following treatment, although debris from the treatment would have a stabilizing effect on denuded soils to prevent erosion. Emergence and development of desired species and/or seeded species may not occur during the first year, but monitoring results from adjacent treatments show that removal of grazing from seeded units during the first two growing seasons would contribute to the achievement of treatment goals and objectives. Treated areas that have been seeded would be restricted from livestock grazing for a minimum of two growing seasons. Temporary fencing would restrict livestock grazing from the seeded area and allow livestock grazing to occur in unseeded areas of an allotment or treatment area. A successful project would restore natural ecological processes with a subsequent increase in vegetative diversity and productivity, and a greater availability of soil moisture and lower evaporation rate over the long term from increased vegetative cover.

Natural recovery of proposed treatment areas to a desired ecological condition is not feasible due to impacts from past disturbances (e.g. drought, wildlife and livestock pressure, past manipulations, etc.) and fire suppression that altered the vegetation's transitional state. A portion of the proposed treatment area have been previously treated and seeded as a range improvement with minimal follow-up maintenance to date. This situation has altered current ecological processes, and necessitates the need for proposed re-vegetation efforts to help restore and stabilize vegetation with a diversity of functional and structural plant groups that sustains the desired level of productivity and properly functioning conditions on public lands. Successful re-vegetation efforts through proposed treatments methods and reseeded should enable a mixture of plant communities that better serve the needs for plant productivity, biotic diversity, desired species habitats, and the fundamentals of rangeland health.

The proposed treatments would directly remove the existing vegetative structure and cover through prescribed fire, or partial woodland cover removal through mechanical (e.g. bull hog) and/or hand cutting efforts, across the approximately 76,779 acre analysis area. Phases II and III propose to treat 8,266 acres.

Proposed prescribed fire would provide a natural process to reduce closed canopies of trees, reduce hazardous fuels, create mosaics, and release the existing plant understory that may be supplemented with seeded species. This process would essentially eliminate all vegetative biomass within the burn unit, and release nitrogen and other nutrients from the burn back into the soil in the form of mineral-rich ash. The initial loss of plant biomass resulting from prescribed burning would be short-term, until seeded and existing desired plants germinate, sprout, regrow, and establish to provide for biotic integrity post fire. In the long-term, early seral vegetative communities would establish, propagate, and dominant post fire and provide for soil stability, desired species composition and diversity, and rangeland health.

Proposed mechanical treatment in deeper and more productive soils would shred green and dead tree canopies. This would create a mulch layer from masticated trees on the ground's surface. An initial decrease in vegetation cover would occur immediately following mechanical treatment. This mulch and debris from the treatment would have a stabilizing effect on soils and vegetative communities. It would provide a protective layer for seedling germination, retain moisture, and allow existing understory plants to recover post treatment.

Removal of pinyon and juniper woodlands encroaching into sagebrush communities would return these ecological sites towards their natural potential as described in ecological site descriptions and increase biotic integrity. This would benefit rangeland health over the long-term and maintain desired functional and structural plant groups at a level appropriate for the site.

The actual application of aerially applied seed would have minimal direct effect to treated areas until seeded species are established. Broadcast seeding, drill seeding, and harrowing would have a direct short-term effect to remaining plant populations through physical displacement by the equipment and drill, yet this situation would be minimal in extent as the equipment is designed for rangelands conditions. Successful establishment of seeded species, in conjunction with native plant re-growth, would allow positive long-term direct effects by providing an appropriate level of desired species for the site.

Monitoring would be conducted to determine if objectives of the proposed action are achieved and to determine potential impacts post-treatment. This collected data would help make management decisions to direct modifications in the proposed actions, if needed, to make progress to achieving desired rangeland rehabilitation efforts.

The treatment efforts would help to restore many functions of the affected ecological sites. This would be accomplished by removal of pinyon and juniper trees that allows for increased expression of understory plants, providing a seed mix that includes a diversity of plant species, rehabilitating degraded areas with desired plants, and maintaining previous range improvement seedings to regain productivity levels. These factors would assist the proposal area in achieving rangeland health and associated standards by allowing for proper ecological processes to support healthy biotic populations and communities (USDI, 2005). Successful treatments would restore natural ecological processes with a subsequent increase in vegetative diversity, productivity, composition, and cover rates.

4.2.1.5 Vegetation: Woodlands/Forestry

Tree removal and/or thinning are the primary management tools employed in the process of decreasing fuel loads and continuity in pinyon/juniper woodlands. With Stand Density Index (SDI) used as a measurement tool, thinning guidelines generally recommend reducing stands approximately 25% of maximum SDI or lower, which will open the canopy and allow an increase in understory species. SDI is based on the relationship between mean tree size and the number of trees per unit area in a forest stand. The maximum SDI for pinyon/juniper stands has not been fully determined, although ongoing

studies generally reflect a maximum SDI of 415 for mixed stands (Page, BLM, 2006). Treatment goals and objectives include leaving a select mix of vigorous pinyon and juniper trees of various size and age classes. The desired overall visual aesthetic following treatment is an open, park-like area with small clusters of multiple age classes of trees throughout the project area.

Direct effect to woodlands include burning of woodlands with prescribed fire, and selective mechanical shredding and hand cutting, lopping, and scattering of individual pinyon and juniper trees. These actions would occur over a 5-10 year period in 50-500 acre increments across the approximately 76,779 acre project area. Roughly 29,992 acres, or 39%, of the project area's ecological sites are associated with pinyon and juniper woodlands. Roughly 26,913 acres, or 35%, of the project area's ecological sites are associated with Sagebrush species.

The proposed action would result in the reduction of pinyon/juniper and the eventual elimination of slash debris from cutting and dispersal of live trees and brush. Because the incidence and frequency of large, severe fires in persistent woodlands has increased over the past 20 years, there is a high likelihood that the project area could experience a stand-replacing fire that may spread to adjacent areas. Reducing the density of growth in this area could provide key information in understanding more about these sites while reducing the potential for stand-replacing wildland fire.

Proposed prescribed fire of woodlands would provide a natural process to reduce closed canopies of trees, reduce hazardous fuels, create mosaics, and release the existing plant understory that may be supplemented with seeded species. This process would essentially eliminate the woody biomass within the burn unit, and release nitrogen and other nutrients from the burn back into the soil in the form of mineral-rich ash.

Proposed mechanical shredding and hand removal of pinyon and juniper trees would selectively reduce the number and diversify the age classes of these woodlands. Also, removal of pinyon-juniper woodlands encroaching into sagebrush communities would return these ecological sites towards their natural potential and increase biotic integrity.

Biomass utilization would occur in units where there is interest and would result in the removal of the pinyon/juniper for commercial use. "Biomass utilization is defined as the harvest, sale, offer, trade, and/or use of woody biomass. This utilization results in the production of a full range of wood products, including timber, engineered lumber, paper and pulp, furniture, and value-added commodities, as well as bioenergy and/or bio-based products such as plastics, ethanol, and diesel." (USDA FS, 2007). The removal of biomass in the 89 acres designated for fuel wood harvest and post/pole harvesting would reduce stand densities, increasing residual tree health and increasing resistance of residual trees to insect-caused mortality. Biomass removal would open the canopy and thus help to retain and encourage growth of seeded native understory species. It would provide important wildlife habitat (often which is unique in landscapes otherwise dominated by pinyon-juniper woodlands and non-forested rangelands). The designated area for biomass

removal would also provide opportunities for the public to gather fuel wood and cut posts and poles for fences through the issuance of permits for private use.

A successful project would restore natural ecological processes with a subsequent increase in vegetative diversity and productivity, and a greater availability of soil moisture and lower evaporation rate over the long term from increased vegetative cover.

Allowing permits to be distributed for fuel and other wood harvesting in the thinned and piled areas as proposed in the project description, could advance the removal of slash debris within the treatment area.

As stated in the proposed action's treatment design and methodology section, old growth trees would be avoided. Thereby, these unique and often irreplaceable ecological values that old-growth stands provide for animal and plant habitat, genetic diversity, and long-term climate records (Kaufmann et al. 1992; Miller et al. 1999) old-growth trees would remain intact.

Pinyons, junipers and shrubs typically re-establish in four to six years, maintenance would be necessary to these stands from overtaking treated sites, which would be expected to occur within forty to sixty years without further treatment (West and Van Pelt, 1987).

Previous range improvement projects in the project area removed the woodland community and then seeded the area to grass. Pinyon and juniper trees are re-establishing in these sites and lowering desired ecological conditions and productivity. The proposal is in part maintenance of these previous range improvements that would partially eradicate the re-growth of trees by utilizing natural processes, such as prescribed fire, and selective removal of individual trees by hand cutting and mechanical shredding.

Allowing woodland harvesting permits to be distributed in the planned project areas, as proposed, could advance the removal of trees and slash debris from previous treatments and within portions of the untreated proposed area.

A reduction in the presence of woodlands would lower fuel loads and reduce the possibility of wildfires on a high intensity and large landscape scale. This would be beyond management objectives that cause total stand loss and greater potential for further sagebrush reductions. Thereby, the proposal would help restore proper fire intervals, intensity, and burn size, which would allow for the future use of wildfire as a tool for land management practices.

4.2.1.6 Soils

Ground disturbance associated with mechanical treatment may cause short term increases in runoff resulting from vegetation removal. Soil compaction and ruts from mechanical treatment may also affect runoff in the short term, although compaction impacts would be reduced by the deposition of mulch and shredded materials. Mulch and surface litter from treatment activities would also trap sediment and allow for greater water infiltration, which would decrease short term wind erosion. If successful, the proposed treatment

would establish beneficial plant species composition as well as rooting depth, which would increase both soil fertility and resistance to compaction. In the long term, enhanced soil coverage from perennial grasses and shrubs would increase infiltration and reduce runoff. Improved soils would support the hydrologic function and contribute to watershed health.

Regardless of the method utilized to remove vegetation, treatments could result in short term negative effects. Potential effects could include increased rates of erosion and reduced water infiltration, which could lead to soil loss and reduced soil productivity. All vegetation removal activities have the potential to increase surface water runoff as a result of vegetation removal, which could lead to sedimentation in wetlands. However, under normal precipitation patterns, it is most likely that excess moisture would be utilized by the remaining vegetation.

The use of UTVs/tractor for seed dispersal could create some short term impacts to soils. Harrowing could have the highest short term impacts resulting from the loss or disturbance of soils crusts and soils structure, which may cause lo soil aggregate stability and increased potential for short term (1 to 2 years) wind and water erosion. Because vegetation would be expected to increase in both diversity and quantity, over several growing seasons following completion of the project, the negative impact to soils crusts would be offset by increased vegetation and soils stabilization. Depending on climatic conditions and other potential disturbances in the area, vegetation regrowth could begin to stabilize soils as soon as the first growing season following treatment.

The operation of mechanical equipment (bullhog, rangeland drill, tractors, ATVs, seed drags) and/or biological control could impact biological soil crusts. Destruction of biological soil crusts results in decreased organism diversity, soil nutrients, soil stability, and organic matter.

High intensity fire associated with stand replacing wildfire could impact biological soil crusts. Low intensity fire would have few adverse effects on the healthy biological soil crusts in the open interspaces (Warren, 2009).

Undisturbed crusts located proximate to disturbed or destroyed crusts act as an inoculum to increase the rate of recovery to nearby disturbed areas (USGS, 2006). When disturbed, crust recovery rates are dependent on disturbance type, severity, and extent; vascular plant community structure; adjoining substrate condition; inoculation material availability; and climate during and after disturbance. On the Colorado Plateau, studies of scalped plots (severe disturbance resulting in bare soil) reassessed 2 to 5 and 10 to 14 years after disturbance indicated that recovery of early successional cyanobacteria occurred within 14 to 34 years. Recovery times for mid- and late-successional species are unknown, as recovery times are so long no estimates are possible (Belnap et al., 2001).

In the long term, the proposed project would move the area toward a more desirable fire condition that could decrease the size, severity and duration of wildland fire. Less severe wildland fire would result in fewer impacts to soil characteristics such as temperature and

physical structure. Re-vegetation activities would improve soil resources in the long term and reduce the potential for erosion by fostering a healthy, resilient understory. A decrease in potential impacts to soils crust from severe fire would result in increased fixation of atmospheric nitrate and a reduction in soil erosion.

Following a successful treatment, fire regimes would be expected to return to a more natural pattern with fewer indirect soil impacts common to high intensity fire such as increased stream sediment loading, and fugitive dust from wind erosion.

4.2.1.7 Water: Hydrologic Conditions

Negative impacts on the watershed created from PJ encroachment is soil erosion (Farmer 1995). By removing PJ it will allow for the current grasses and forbs to return and stabilize the soil and decrease the speed of waterflow and the size of soil particles that can be moved downstream and therefore reduce erosion. This project will help to protect this from happening in the future and save the ecosystem from irreversible losses to soil. Cut trees will also be placed in washes to slow the flow of water and promote pooling and reduce them eroding as quickly. In water-limited systems, an added benefit to PJ removal can be the potential to increase water savings. PJ have been shown to intercept about 10-20 percent of precipitation (Skau 1964). Also, where PJ encroachment has resulted in large bare ground areas it has been shown that these systems can have greater precipitation runoff (Farmer 1995). Results of the Great Basin Landscape Conservation Cooperative study in Nevada (Desatoya Mt.) found that by removing (lop and scatter) P/J (130 trees/acre) there is the potential to increase water recharge yields 4% on wet years. On wet years this will increase recharge, but does not increase stream flow. Wet meadows and upland plants benefit by utilizing the increase soil moisture, providing for better resiliency during drought years. This provides for an increase in water quantity for herbaceous plants on sites where p/j is removed. By removing PJ on this project we will be preventing the increased loss of water from occurring. This project is very large and has the potential to make a large impact on the watershed.

Mechanical treatments could interrupt some gullies and rills in the project area. However, observance of standard operating procedures would reduce the effects of these disturbances to a minimum. Groundwater recharge could be affected by increased runoff and resultant increases in infiltration. This increase in groundwater could cause an increased flow in the streams, resulting in degrading of the streambed. However, the affect would be temporary and limited to the recovery period, after which the groundwater and streambeds would reach a new dynamic equilibrium. In the long term, hydrologic conditions would improve by shortened slope length of runoff due to new plant growth.

The long-term beneficial effects of the proposed treatment include the restoration and preservation of the natural resource values of stream beds and flow patterns through the creation of a healthy, resilient, and more diverse vegetative community.

4.2.1.8 Water: Surface Water Quality

The streams in the project area could potentially be impacted by short-term increased flows due to the loss of vegetation from mechanical and manual removal. Removal of

vegetation could have a temporary effect on surface runoff by increasing the potential for frequency and magnitude of peak flow compared to pre-treatment conditions. Effects would depend to a certain extent on site gradient and physical characteristics, but overall would be expected to be minor and short-term unless an unusually extreme precipitation event occurred immediately following treatment.

The long term beneficial effects of the project include less sediment yield, and increased quality of water in the streams due to fewer particulates reaching the streams.

4.2.1.9 Wildlife:

Greater Sage-Grouse (BLM Sensitive Species)

Loss and fragmentation of sagebrush habitat is the primary cause of decline of GRSG populations across the west (Connelly et al. 2004). Several factors are linked to loss of sagebrush habitat; fire, expansion of conifers, energy development activities, invasive weeds and lack of sufficient regulatory mechanisms (USFWS 2013). The proposed treatment will address several of these identified threats to sage-grouse and their habitat. BLM will comply and implement required design features and management actions identified in the ARMPA (2015) to treat, maintain, and expand healthy GRSG habitat (Appendix E).

Mule Deer and Elk

Deer and elk may be temporarily displaced during the treatment. Winter work would only be conducted during mild winters; this would prevent added stress to mule deer and elk. No activities in crucial elk and deer winter range will take place from December 1st to April 15th unless an authorized officer determines that the animals are not present in the project area or the activity can be completed so as to not adversely affect the animals (Price RMP, Appendix 3 pg. 4).

The long-term impacts to deer and elk would overall be beneficial. Considerable research has been done on mule deer and elk responses to mechanical treatments and prescribed burning. Reducing trees, protecting sagebrush parks, and seeding vegetative species preferred by wildlife, deer and elk would increase forage while still providing thermal cover in the winter. This would also help increase survival rates for deer and elk throughout the winter, as well as fecundity rates since females would potentially be healthier coming off the winter range while pregnant.

4.2.1.10 Monitoring and/or Compliance

Transects and/or photo plots to document fuel load and vegetation composition would be assembled within the treatment area prior to project implementation. Monitoring results would be documented prior to treatment and for a period following completion of the project. A successful reduction in fuel load and reduced flammability of the treatment area, in addition to improved habitat and forage, would indicate desired goals had been reached.

BLM monitoring projects are ongoing from Canyon Country Fire Zone treatments in similar vegetative communities in the Moab, Monticello and Price field offices, and



Plot Set-up Prior to Treatment

treatment results are utilized in both design and methodology for newly proposed projects. Because restoration is a relatively new science, treatments may deviate from the predicted or desired outcome even in a carefully planned and implemented treatment.

Treatment monitoring is therefore essential to improve future project planning as well as to contribute to the growing database of monitoring results. Partnership between agencies is a critical step in adaptive management of forests and

woodlands in southeastern Utah. The Canyon Country Fire Zone has taken the lead in an effort to combine datasets such as past fire occurrence and fuels treatments with newer treatment data from cooperating agencies in southeastern Utah to create a comprehensive look at collective activities on a landscape scale.

Joint research studies have taken place in several other project areas within the Moab and Monticello Field offices. The BLM and the University of Colorado (CU) are collaborating on research studies to evaluate different types of fuels management treatments (mechanical, manual and prescribed fire) to measure potential effects on soils, water quality and vegetative recovery.

Research collaboration supports the BLM's ongoing efforts to better understand the ecological processes occurring in pinyon/juniper woodlands and assists in the design of future treatments in this type of ecosystem.

Research and monitoring results from the North Springs Habitat Enhancement project would be incorporated into management decisions regarding future resource treatments in this area as well as in other areas of the Canyon Country Fire Zone. Further



Photo Plot Monitoring Following Hand-cut Treatment

treatment in this project area could include maintenance burning, additional seeding, reintroduction and/or adjustment of grazing seasons or numbers, additional fuels treatments, and/or other actions. Any work to be completed on State, Private or SITLA lands will comply with all federal regulations and mandates (i.e. archeological clearance, special status species surveys etc.). Management decisions requiring treatment methods not previously analyzed could initiate further NEPA analysis.

In addition to fuels monitoring, post treatment monitoring of cultural resources will be conducted.

4.2.2. Alternative B – No Action

4.2.2.1 Fuels/Fire Management

With no treatment, the risk of an intensive stand-destroying fire would be high. Stand-destroying fires effectively eliminate existing forage and wildlife cover. A decline in vegetative diversity would continue into the future if cheatgrass, pinyon-juniper and decadent sagebrush were allowed to continue unabated. If no action were taken to reduce the hazardous fuels threat continued fuel loading would pose a much greater wildfire hazard than currently exists. A combination of high temperatures, low relative humidity, winds, and/or continued drought conditions could create the potential for a catastrophic and hazardous fire, jeopardizing the health and safety of personnel and firefighter within North Springs and posing a threat to public/private property.

4.2.2.2 Livestock Grazing

Under the No Action Alternative, livestock grazing would continue under current management and there would be no need for required rest periods under the Proposed Action. There would be no potential benefits to the 8 allotments that may have been

realized from the fuels reduction and corresponding improvement in vegetative diversity, vigor, and productivity.

A lack of maintenance of previous range improvement projects (e.g. chaining's and seeding's) would allow for the continued re-establishment of pinyon and juniper trees in these previously treated sites. This reduces herbaceous understory plants and reduces the carrying capacity for livestock on the rangelands.

Fuel loads would continue to increase, thereby escalating the chance of large wildland fires that would impact intact native perennial grass/shrub communities and existing range improvements. This could lead to emergency livestock grazing closures of a large area, thereby limiting livestock use of authorized allotments.

4.2.2.3 Vegetation: Invasive Species/Noxious Weeds

Potential for the spread of invasive, non-native plant species and noxious weeds would be low since no surface disturbance would occur. Control of noxious weeds would continue to occur on an annual basis.

If a stand replacing fire were to occur, it could cause an increase of both noxious and invasive species. A proliferation in cheatgrass, in turn, may lead to a potential increase in fire frequency due to its flammability.

4.2.2.4 Vegetation: Excluding USFWS Designated Species and BLM Sensitive Species

Under the No Action Alternative, there would be no direct impact to vegetation resulting from the Proposed Action's use of rangeland equipment (e.g. bull hog, drills, harrows, tractors, etc.), herbicides, burns, hand cutting, biological control methods (e.g. goats and sheep), and/or from fencing.

Vegetation within the proposed treatment areas would continue in their current ecological condition. Sagebrush communities would continue to be encroached by pinyon and juniper woodlands in the Upland Loam (Big sagebrush) and Semidesert Loam (Big sagebrush) ecological sites. Past vegetative treatments would not be maintained and also be further encroached by woodlands. These situations result in the decline in productivity, oppression of herbaceous understories, and hindering of biotic integrity at these sites. Desired species would not be maintained at a level appropriate for the sites and species involved.

Other indirect impacts include the increased potential for high intensity, large scale wildland fires across the various ecological sites due to increased fuel loads associated with expanding pinyon and juniper woodlands. This situation may cause soil sterilization that would limit vegetative response after a high intensity wildfire. Also, cheatgrass (non-native, invasive plant species) would have a greater opportunity for establishment post high intensity fire that could displace native and desired vegetative communities.

4.2.2.5 Vegetation: Woodlands/Forestry

The pinyon-juniper woodland would remain intact under the no action alternative. No reduction of the mature pinyon-juniper would be realized and eventually the age and size of pinyon-junipers would be relatively constant. The possibility of insect-caused mortality would continue. A wildland fire occurring in a dense, closed canopy, overly mature woodland could burn severely enough to denude all existing vegetation.

4.2.2.6 Soils

Under the no action alternative there is potential in some of the project areas (highest pinon and juniper canopy) for indirect impacts to soils due to an increased risk of a large scale high-intensity wildland fire. In the absence of a fuels reduction treatment, the densities of pinyon-juniper and woody debris would increase the likelihood of a high severity wildland fire. Although fire suppression activities would continue as in the past, a fast-moving wildland fire could out-pace suppression efforts.

4.2.2.7 Water: Hydrologic Conditions

Under the No Action Alternative, the project would not go forward, and no new impacts to the project area would occur.

4.2.2.8 Water: Surface Water Quality

Under the No Action Alternative, the project would not go forward, and no new impacts to the project area would occur.

4.2.2.9 Wildlife:

The No Action Alternative would lead to continued loss and fragmentation of sagebrush habitat that could otherwise be used by GRSG. Without treatment conifer expansion will continue throughout the area and fuel loads will continue to rise. Over time it is expected that the project area would transform to a pinyon-juniper woodland, removing the majority of shrub and herbaceous understory. This increase in fuel loads could cause harm to nearby sagebrush habitats by escalating the potential for wildfire fires. Preventing GRSG habitat fragmentation and loss from fire and conifer expansion is a key management objective for maintaining and improving their population.

4.3 Cumulative Impacts Analysis

4.3.1 Fuels/Fire Management

4.3.1.1 Cumulative Impact Area (CIA)

The Cumulative Impact Area (CIA) is the project area, which is approximately 76,779 acres.

4.3.1.2 Past and Present Actions

Fire history since 1981 comprises of 163 fires and a total of 12753 acres burned. Past and present projects within the North Springs Analysis area include:

AREA	Acres	Treatment	Dates
North Springs Phase I	2,435	Bullhog	2016

Other past and present actions within the CIA include recreational activities, livestock grazing, wildlife management areas, wildfires, oil and gas operations and activities on private land including agriculture. The effects of these activities are impossible to quantify, but all may contribute to the issues brought forth in this EA.

4.3.1.3 Reasonably Foreseeable Action Scenario (RFAS)

Reasonably foreseeable actions occurring within the project area include recreational activities, livestock grazing, wildlife management areas, wildfires, activities on private land including agriculture, oil and gas operations, fuel wood gathering, and continuing cooperative weed management efforts. The effects of these activities are impossible to quantify, but all may contribute to the issues brought forth in this EA.

4.3.1.4 Cumulative Impact Analysis

Cumulative Impacts that can be expected from the proposed action would include increased ground cover (i.e. grass, forbs etc.), decreased erosion, and a lower fire potential. Current fuels within the project are classified as a FRCC 2/3. Post fuels treatments should convert most of the CIA area to a FRCC 2/1. This conversion should lower the risk of losing key ecosystem components and alter fire frequencies and size to more historic levels.

4.3.2 Livestock Grazing

4.3.2.1 Cumulative Impact Area

The Cumulative Impact Area (CIA) is the project area, which is approximately 76,779 acres.

4.3.2.2 Past and Present Actions

Past and present actions occurring within the CIA include recreational activities, livestock grazing, wildlife movements, activities on adjacent private land, associated traffic, and fuel wood/Christmas tree harvesting.

4.3.2.3 Reasonable Foreseeable Action Scenario

Reasonable foreseeable actions within the CIA include the continuation recreational activities, livestock grazing, wildlife movements, activities on adjacent private land, associated traffic, and fuel wood/Christmas tree harvesting.

4.3.2.4 Cumulative Impact Analysis

The proposed treatment is expected to result in a conversion of the tree community to an early seral stage vegetation community. The anticipated plant community after treatment would provide a higher cover, variability, and density of vegetation.

An initial decrease in vegetation cover would occur immediately following mechanical treatment, although mulch and debris from the treatment would have a stabilizing effect on denuded soils to prevent erosion. A successful project combined with the activities in the CIA, would restore natural ecological processes with a subsequent increase in vegetative diversity and productivity within the treated areas of the project area. There would be a greater availability of soil moisture and lower evaporation rate over the long

term from increased vegetative cover. The amount of forage available for livestock grazing could increase. However, the overall grazing use level within the CIA could decrease since the total amount of authorized livestock grazing use would not be increased due to more available forage.

4.3.3 Vegetation: Invasive Species/Noxious Weeds

4.3.3.1 Cumulative Impact Area

The Cumulative Impact Area is from Wildcat Canyon to south of Hiawatha on the benches east of the Manti La Salle Mountains which is approximately 76,779 acres. The area includes a rail road, natural gas fields, livestock grazing as well as several types of recreation within the area. The existing condition of this area is addresses in Chapter 3 and the potential impacts from project activities are discussed in each alternative in Chapter 4 of this document. The duration for CIA would be the potential life of the project, public wood gathering and post/pole cutting areas and gas fields.

4.3.3.2 Past and Present Actions

Past and present actions occurring within the CIA include recreational activities, livestock grazing, wildlife movements, activities on adjacent private land, methane gas production and associated traffic, and fuel wood/Christmas tree harvesting. Approximately 2,000 acres of federal land within the CIA were treated in the 1960's. Treatments included pinyon/juniper removal by chaining and sagebrush removal by plowing. The treated acres were seeded with introduced grasses and native shrubs.

4.3.3.3 Reasonable Foreseeable Action Scenario

Reasonable foreseeable actions within the CIA include the continuation recreational activities, livestock grazing, wildlife movements, activities on adjacent private land, methane gas production and associated traffic and fuel wood/Christmas tree harvesting.

4.3.3.4 Cumulative Impact Analysis

It is possible that after implementation of the proposed action, while vegetation is not established during the reclamation process, vehicles including ATVs, humans, livestock and wildlife could spread invasive species/noxious weeds into the project area. It is also possible that any of the vectors listed above could spread invasive species and noxious weeds to any road or area in the CIA. Plant communities within the CIAA could be altered by invasive species/noxious weed encroachment, possibly changing the community's successional trajectory and composition, if invasive species/noxious weeds out compete native plants.

Disturbance to the soil surface caused by project-related activities could potentially increase the invasion and establishment of invasive, non-native weed species. The negative environmental aspects of invasive species/noxious weed establishment on the project area could include:

- degradation of wildlife and livestock habitat,
- increased soil erosion
- reduced land values,

- reduction of aesthetic values, and
- reduction of native plant diversity.

Implementing the methods of controlling the spread of invasive and non-native species described in the BMPs would result in a minimal additive effect described in the cumulative impacts section.

4.3.4 Vegetation: Excluding USFWS Designated Species and BLM Sensitive Species

4.3.4.1 Cumulative Impact Area

The Cumulative Impact Area is from Wildcat Canyon to south of Hiawatha on the benches east of the Wasatch Plateau which is approximately 76,779 acres. The area includes a railroad, natural gas fields, livestock grazing as well as several types of recreation within the area. The existing condition of this area is addressed in Chapter 3 and the potential impacts from project activities are discussed in each alternative in Chapter 4 of this document. The duration for CIA would be the potential life of the project, public wood gathering and post/pole cutting areas and gas fields.

4.3.4.2 Past and Present Actions

Past and present actions occurring within the CIA include recreational activities, livestock grazing, wildlife movements, activities on adjacent private land, methane gas production and associated traffic, and fuel wood/Christmas tree harvesting. Approximately 2,000 acres of federal land within the CIA were treated in the 1960's. Treatments included pinyon/juniper removal by chaining and sagebrush removal by plowing. The treated acres were seeded with introduced grasses and native shrubs.

4.3.4.3 Reasonable Foreseeable Action Scenario

Reasonable foreseeable actions within the CIA include the continuation of recreational activities, livestock grazing, wildlife movements, activities on adjacent private land, methane gas production and associated traffic and fuel wood/Christmas tree harvesting.

4.3.4.4 Cumulative Impact Analysis

An initial decrease in vegetation cover would occur immediately following mechanical treatment, although mulch and debris from the treatment would have a stabilizing effect on denuded soils to prevent erosion. A successful project combined with the activities in the CIA, would restore natural ecological processes with a subsequent increase in vegetative diversity and productivity within the treated areas of the project area. There would be a greater availability of soil moisture and lower evaporation rate over the long term from increased vegetative cover. The proposed project, combined with the activities in the CIA, would change the vegetation seral stage of newly treated areas from a late seral stage to an early seral stage. Previously treated areas would also change from a late seral stage to an early seral stage and established seedlings would be enhanced with inter-seeding treatments.

4.3.5 Vegetation: Woodlands/Forestry

4.3.5.1 Cumulative Impact Area

The Cumulative Impact Area is from Wildcat Canyon to south of Hiawatha on the benches east of the Manti La Salle Mountains which is approximately 76,779 acres. The area includes a rail road, natural gas fields, livestock grazing as well as several types of recreation within the area. The existing condition of this area is addresses in Chapter 3 and the potential impacts from project activities are discussed in each alternative in Chapter 4 of this document. The duration for CIA would be the potential life of the project, public wood gathering and post/pole cutting areas and gas fields.

4.3.5.2 Past and Present Actions

Past and present actions occurring within the CIA include recreational activities, livestock grazing, wildlife movements, activities on adjacent private land, methane gas production and associated traffic, and fuel wood/Christmas tree harvesting. Approximately 2,000 acres of federal land within the CIA were treated in the 1960's. Treatments included pinyon/juniper removal by chaining and sagebrush removal by plowing. The treated acres were seeded with introduced grasses and native shrubs.

4.3.5.3 Reasonable Foreseeable Action Scenario

Reasonable foreseeable actions within the CIA include the continuation recreational activities, livestock grazing, wildlife movements, activities on adjacent private land, methane gas production and associated traffic and fuel wood/Christmas tree harvesting.

4.3.5.4 Cumulative Impact Analysis

The primary focus of the proposed project is to enhance habitat conditions for GRSG.

Opening up the canopy through pinyon/juniper tree removal activities will create environmental site conditions favorable to grasses, forbs and shrub establishment, while also reducing the potential for damage from high-severity wildland fire.

After completion of the proposed project, wildfire moving into the project area would drop from the tree canopies to the ground and would spread by perennial grasses, forbs and shrubs rather than through the tree canopy. This would improve the ability to attack wildfire and improve safety and efficiency of fire suppression forces. Completion of the project would also restore natural ecological processes with a subsequent increase in vegetative diversity and productivity within the treated areas of the project area. The impacts to woodlands/forestry would improve overall woodland/forest health by thinning the pinion/juniper and returning the project area to an earlier seral state where the vegetation will consist of a diverse community of grasses, shrubs and forbs. This would improve habitat conditions for GRSG as well as big game. There would be a greater availability of soil moisture and lower evaporation rate over the long term from increased vegetative cover that will allow infiltration into the soil.

4.3.6 Soils

4.3.6.1 Cumulative Impact Area

The Cumulative Impact Area (CIA) is the project area.

4.3.6.2 Past and Present Actions

Past and present actions occurring in the CIA would include all activities that are associated with physical land use including recreation, livestock grazing, wildlife movements, oil and gas activities, and activities in the management of private and State land.

4.3.6.3 Reasonable Foreseeable Action Scenario

Reasonable foreseeable actions within the CIA include the continuation recreational activities, livestock grazing, wildlife movements, continued oils and gas extraction, and activities on adjacent private land.

4.3.6.4 Cumulative Impact Analysis

Impacts of the proposed action combined with other activities would minimally contribute to the CIA when combined with the past and present actions. After project completion, the soils resource would be improved due to a more diverse vegetative cover.

4.3.7 Water: Hydrologic Conditions

4.3.7.1 Cumulative Impact Area

The CIA is the project area. All water resource impacts would be reasonably contained in the project area.

4.3.7.2 Past and Present Actions

Past and present actions occurring in the CIA would include all activities that are associated with physical land use including recreation, livestock grazing, wildlife movements, oil and gas activities, and activities in the management of private and State land.

4.3.7.3 Reasonable Foreseeable Action Scenario

Reasonable foreseeable actions within the CIA include the continuation recreational activities, livestock grazing, wildlife movements, continued oils and gas extraction, and activities on adjacent private land.

4.3.7.4 Cumulative Impact Analysis

Impacts of the proposed action combined with other activities would minimally contribute to the CIA when combined with the past and present actions.

4.3.8 Water: Surface Water Quality

4.3.8.1 Cumulative Impact Area

The CIA is the project area. All water resource impacts would be contained in the project area.

4.3.8.2 Past and Present Actions

Past and present actions occurring within the CIA include recreational activities, livestock grazing, wildlife movements, activities associated with oil and gas extraction, and activities on adjacent private land

4.3.8.3 Reasonable Foreseeable Action Scenario

Reasonable foreseeable actions within the CIA include the continuation recreational activities, livestock grazing, wildlife movements, continued oils and gas extraction, and activities on adjacent private land.

4.3.8.4 Cumulative Impact Analysis

Impacts of the proposed action combined with other activities would minimally contribute to the CIA when combined with the past and present actions.

4.3.9 Wildlife:

4.3.9.1 Cumulative Impact Area

Greater Sage-Grouse (BLM Sensitive Species)

The CIAA for GRSG would include the Carbon County GRSG habitat as identified by DWR which composes 92,900 acres of BLM surface estate. The Carbon population includes lekking, breeding, brood-rearing, and wintering habitats.

Big Game (Mule Deer and Elk)

The CIAA for mule deer is big game Herd Unit # 16BC - Central Mountains, Manti/San Rafael which includes portions of Carbon, Emery, Sanpete, Sevier and Utah counties. The effects of the proposed action on the big game are expected to be contained within the herd unit and UDWR manages the elk and deer populations within these boundaries. The herd unit contains yearlong, summer and winter ranges with a mix of federal, state and private ownership (UDWR 2015 and UDWR 2016).

4.3.9.2 Past and Present Actions

Past and present actions that can affect habitat value occurring within the CIAA include recreation activities like hunting, hiking and OHV use, livestock grazing, natural gas field development, activities on adjacent private land, and habitat treatments.

Approximately 2,000 acres of federal land within the CIAA were treated in the 1960's.

Treatments included pinyon/juniper removal by chaining and sagebrush removal by plowing. The treated acres were seeded with introduced grasses and native shrubs.

Habitat treatments to benefit elk and deer were completed on over 67,000 acres from 2012 to 2016. The treatments include removal of encroaching pinyon and juniper and seeding with native and non-native forage species and rejuvenating sagerbrush (UDWR 2015 and UDWR 2016).

4.3.9.3 Reasonable Foreseeable Action Scenario

Reasonable foreseeable actions within the CIAA include the continuation of recreation activities, livestock grazing, natural gas field development and management, activities on adjacent private land and additional habitat treatments to benefit elk and deer.

Approximately 10,000 acres of habitat treatments are proposed.

4.3.9.4 Cumulative Impact Analysis

Cumulative impacts may include an increase in usable GRSG habitat by removing some of the less desirable pinyon-juniper from sagebrush sites as well as a short term increase in grasses and forbs on treatment sites. Fire risk may also be reduced with treatments over the short and long term. Cumulatively, these vegetation project acres add up with past and future treatments by creating habitat, which includes movement corridors for GRSG and may help benefit the overall population within Carbon County. There will be a continued need for vegetation treatment projects throughout Carbon County and GRSG seasonal ranges in order to address continued threats to GRSG. These treatments and other management practices are anticipated to continue to occur in the future on both public and private lands. The No Action Alternative would not result in an accumulation of impacts.

Big Game (Mule Deer and Elk)

Habitat treatments including the removal of encroaching juniper and pinyon will add 8,000 acres of treated land to the recent 67,000 acres of treated land to benefit elk and deer. In this herd unit, winter range and winter range condition is a limiting factor for deer and elk. Portions of critical winter ranges are in poor condition for deer and elk (UDWR 2015 and UDWR 2016). This has resulted in a reduction of winter range carrying capacity. The past treatments combined with the proposed treatments are expected to improve winter range condition for the deer and elk. If the winter ranges can improve, then the herds are more resistant and resilient to the other disturbances like recreation activities and natural gas field development activities that will be on going. The No Action Alternative would not result in an accumulation of impacts.

5.0 CONSULTATION AND COORDINATION

5.1 Introduction

The issue identification section of Chapter 1 identifies those issues analyzed in detail in Chapter 4. Appendix A provides the rationale for issues that were considered but not analyzed further. The issues were identified through the public and agency involvement process described in sections 5.2 and 5.3 below. Scoping, which is an early process for determining issues to be addressed, also helps to identify the issues that are not relevant or that have been reviewed in other environmental documents. Scoping for this project was initially accomplished by resource staff and fuels team members after collaboration with cooperating Federal and State agencies. Quarterly fuels meetings, attended by members of cooperating agencies, serve as a forum to discuss ongoing projects, to plan and propose future projects, and to prioritize treatments for each of the agencies. The North Spring Habitat Enhancement project would help to build upon the success of previous fuels/wildlife treatments within the area.

Notification of the preparation, on-going progress and decision regarding this environmental assessment was posted on the Environmental Notification Bulletin Board (ENBB) located at <https://www.blm.gov/ut/enbb/index.php> on September 23, 2014. It was added to the ePlanning website located at https://eplanning.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do on March 3, 2017. Issues analyzed in detail in Chapter 4 were identified through resource staff, cooperating agencies and interested public involvement.

A copy of the finalized EA will be mailed to Carbon County, the livestock permittees, cooperating agencies and other interested parties.

5.2 Persons, Groups, and Agencies Consulted:

Table 5 - List of all Persons, Agencies and Organizations Consulted for Purposes of this EA.

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Utah State Historic Preservation Office (SHPO)	Consultation for undertakings, as required by the National Historic Preservation Act (NHPA) (16 USC 470)	Letter was sent to SHPO on January 26, 2016 inviting them to be involved in the planning process and solicit feedback. To date the CYFZ has not received feedback. All projects will adhere to the Small-Scale undertakings MOU as discussed in the IDT Checklist (appendix A).
Utah State Division of Forestry, Fire and State Lands [Matt Jones, Southeastern Area Sovereign Lands Coordinator/ WUI Coordinator]	Collaboration and coordination to meet goals and objectives of Community Wildfire Protection Plan; coordination with BLM on potential adjacent private land treatments.	
Native American Tribes	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531) EO 13007	Letters sent on January 26, 2016. One letter received from Hopi tribe supporting the avoidance of sites. The Hopi requested the cultural resources survey report. Phone call received on December 30 th , 2014 from Navajo Tribe requesting consultation.
Carbon County (Rex Sacco)	Project Coordination	
Division of Wildlife Resources (DWR)	Project Coordination.	Continued collaboration.

5.3 Summary of Public Participation

Notification of the preparation, on-going progress and decision regarding this environmental assessment was posted on the Environmental Notification Bulletin Board (ENBB) located at <https://www.blm.gov/ut/enbb/index.phpn> on June 10th, 2013. When finalized, a copy of the EA will be available by link from the ENBB. Public press releases were published on September 5, 2017 to solicit public comments on the North Springs EA. The EA was posted on the ePlanning website on September 1, 2017 for 15-day public comment and review.

5.3.1 Comment Analysis

5.3.2 List of Commenters

5.3.3 Response to Public Comment:

5.4 List of Preparers

5.4.1 BLM

Name	Title	Responsible for the Following Section(s) of this Document
Jason Kirks	Fuels Program Manager, Canyon Country Fire Zone	Collaboration, technical coordination and verification of analyses content; fuels/fire management.
Jeffrey Brower	Hydrologist, Price F.O.	Floodplains; hydrologic conditions; wastes (hazardous or solid); water resources/quality (drinking/surface/ground); Farmlands (prime or unique); Soils.
Peter Kauss	Hydrologist, Vernal F.O.	
Jared Reese	(Former) Wildlife Biologist, Price F.O.	BLM sensitive animal species; migratory birds; T&E/candidate animal species; Fish and wildlife Excluding USFWS Designated Species
Dana Truman	Wildlife Biologist, Price F.O.	
Leah Lewis	Wildlife Biologist (Sage-Grouse), Green River D.O.	
Stephanie Bauer	Rangeland Management Specialist, Price F.O.	Invasive Species/Noxious Weeds; Forestry/Woodland.
Gabe Bissonette	GIS Specialist, Canyon Country Fire Zone	Project Boundary planning and coordination, map creation and consultation
Joshua Relph	NEPA Coordinator, Canyon Country Fire Zone	Resource team consultation, administrative record, data compilation, research, and analysis composition.
Leigh Grench	Canyon Country Fire Zone Archeologist	Cultural Resources and Native American Religious Concerns
Mike Tweddell	Rangeland Mgmt., Wild Horses and Burros, Price F.O.	Wild horses and burros, Grazing/Livestock, Vegetation: Vegetation Excluding USFW Designated Species and BLM Sensitive Species
Jacob Palma	NEPA Coordinator, Price Field Office	Resource team consultation/coordination

6.0 REFERENCES, GLOSSARY AND ACRONYMS

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6.2 Glossary of Terms:

Air Quality: A measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.

Allotment: An area of land designated and managed for grazing by livestock. An allotment may include land not suitable for livestock grazing.

Animal Use Month (AUM): An AUM is the amount of forage needed to sustain one cow and her calf, one horse, or five sheep or goats for a month.

Broadcast Burning: Intentional burning within well-defined boundaries for reduction of fuel hazard, as a resource management treatment, or both.

Crown Fire: The movement of fire through the crowns of trees or shrubs, more or less independent from the surface fire.

Dead Fuels: Fuels with no living tissue in which moisture content is governed almost entirely by atmospheric moisture (relative humidity and precipitation), dry bulb temperature, and solar radiation.

Drip Torch: Hand-held device for igniting fires by dripping flaming liquid fuel on the materials to be burned; consists of a fuel fount, burner arm, and igniter. Fuel used is generally a mixture of diesel and gasoline.

Fire Management Plan: An activity plan developed to support and accomplish resource management objectives and applicable land use decisions authorized in BLM Resource Management Plans.

Fire Regime Condition Class (FRCC): Describes the degree of departure for vegetation from reference conditions, with Condition Class 3 representing the greatest degree of departure.

Forbs: A plant with a soft, rather than permanent woody stem that is not a grass or grass-like plant.

Fuels: Fuels include both living and dead plants, as well as wood already lying on the ground that is capable of burning. High fuel loads can contribute to hot, destructive fires.

Fuel Moisture: The quantity of moisture in fuel expressed as a percentage of the weight when thoroughly dried at 212 degrees Fahrenheit.

Grazing Permit: An authorization which allows grazing on public lands. Permits specify class of livestock on a designated area during specified seasons each year. Permits are of two types: preference (10 year) and temporary nonrenewable (1 year).

Healthy Forest Initiative: On December 3, 2003, President Bush signed into law the Healthy Forest Restoration Act of 2003 to reduce the threat of destructive wildfires while upholding environmental standards and encouraging early public input during review and planning processes. The legislation pledges to care for America's forests and rangelands, reduce the risk of catastrophic fire to communities, help save the lives of firefighters and citizens, and protect threatened and endangered species by encouraging public participation to help develop high priority forest health projects, reduce the complexity of environmental analysis, and provide for a more effective appeal process.

Integrated Pest Management: Management practices that control and eradication noxious weed infestations such as Prevention, Chemical (herbicides), Biological Control, Mechanical, Controlled Burning, Grazing and Revegetation.

Ladder Fuels: Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. Ladder fuels instigate and advance crowning.

Mechanical Treatment: The employment of equipment such as mowers or masticators as the primary method of modifying or removing fuels.

Mitigation: Constraints, requirements, actions, or conditions to reduce the significance of or eliminate an anticipated impact to environmental, socioeconomic, or other resource values from a proposed project or land use.

National Fire Plan (NFP): The National Fire Plan provides national direction for hazardous fuels reduction. This direction emphasizes measures to reduce the risk to communities and the environment. The primary elements applicable to the Upper Kanab Creek Vegetation Enhancement Project are to: 1) improve prevention and suppression efforts; 2) reduce hazardous fuels; restore fire-adapted ecosystems.

Rangeland: Land on which the native vegetation is predominantly grasses, grass-like plants, forbs or shrubs suitable for grazing or browsing use. Includes lands revegetated naturally or artificially to provide forage cover managed like native vegetation.

Resource Management Plan (RMP): A document prepared by field office staff with public participation and approved by management that provides general guidance and direction for land management activities at a field office. An RMP may identify the need for fire in a particular area and for a specific benefit.

Slope: The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Special Status Species: Wildlife and plant species either federally listed or proposed for listing as endangered or threatened; state-listed or BLM determined priority species.

Surface fuels: Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not decayed. Surface fuels can also consist of grasses, forbs, low and medium shrubs, tree seedlings, heavier branch-wood, downed logs and stumps, and/or debris from a “lop and scatter” treatment.

Threatened Species: Any animal or plant species likely to become endangered within the foreseeable future throughout a significant portion of its range. These species are officially listed by the U. S. Fish and Wildlife Service.

Treatment: A technique or action customarily applied to improve a damaged or deteriorated area through management action such as vegetation establishment (seeding, planting, etc.), restricted use, or resource manipulation (i.e. livestock, wildlife, fire, mechanical, recreation, etc.)

Uncontrolled Fire: Any fire which threatens to destroy life, property, or natural resources.

Vegetation Treatment: Fire vegetation and fuel load treatments generally entail reducing the quantity of the fuel load to impede fire’s ability to pass through the habitat. Continuity is often “rearranged” vertically or horizontally; firebreaks or shaded fuel breaks are created in some treatments, or fuels are cut and burned on site and/or removed.

Visual Resource Management (VRM) Classes: Management classes are determined on the basis of overall scenic quality, distance from travel routes, and sensitivity to change.

Wildland Fire: Any naturally ignited, non-structure fire other than prescribed fire.

Wildland-Urban Interface (WUI): Lands on which buildings, homes, and other structures of human development are adjacent to or directly intermingling with undeveloped wildland or other fuel sources.

6.3 List of Acronyms

AUM – Animal Use Month
BLM – Bureau of Land Management
BMP – Best Management Practice
CEQ – Council on Environmental Quality
CIA – Cumulative Impact Area
CFR – Code of Federal Regulation
CU – University of Colorado
CYFZ – Canyon Country Fire Zone
DR – Decision Record
EA – Environmental Assessment
EIS – Environmental Impact Statement
ENBB – Environmental Notification Bulletin Board
ESR – Emergency Stabilization and Rehabilitation
FLPMA – Federal Land Policy Management Act
FMU – Fire Management Unit
FONSI – Finding of No Significant Impact
GHMA – General Habitat Management Area
GNA – Good Neighbor Authority
GRSG – Greater Sage-Grouse
HLI – Healthy Lands Initiative
MOU – Memorandum of Understanding
NEPA – National Environmental Policy Act
NHPA – National Historic Preservation Act
NPDES – National Pollutant Discharge Elimination System
NRCS – Natural Resource Conservation Service
NRHP – National Register of Historic Places
OHV – Off Highway Vehicle
PEIS – Programmatic Environmental Impact Statement
PHMA – Priority Habitat Management Area
PFO – Price Field Office
PI – Potential Impacts
PJ – Pinyon-Juniper
PL – Public Law
PSD – Plastic Sphere Dispenser
PUP – Pesticide Use Proposal
RFAS – Reasonably Foreseeable Action Scenario
ROD – Record of Decision
RMP – Resource Management Plan
RMRS – Rocky Mountain Research Station
SHPO – State Historic Preservation Officer
SOP – Standard Operating Procedure
UDWR – Utah Division of Wildlife Resources
UPCD – Utah Partners for Conservation Development
USC – United States Code
USDA – United States Department of Agriculture
USFWS – United States Fish and Wildlife Service

USGS – United States Geological Survey
USDI – United States Department of Interior
USEPA – United States Environmental Protection Agency
WRI – Watershed Restoration Initiative

APPENDICES

APPENDIX A Interdisciplinary Team Checklist

INTERDISCIPLINARY TEAM CHECKLIST

Project Title: North Springs Habitat Enhancement Project

NEPA Log Number: DOI-BLM-UT-G020-2014-0046-EA

File/Serial Number:

Project Leader: Jason Kirks / Joshua Relph

DETERMINATION OF STAFF: *(Choose one of the following abbreviated options for the left column)*

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for relevant impact that need to be analyzed in detail in the EA

NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale for Determination column may include NI and NP discussions.

Determination	Resource/Issue	Rationale for Determination	Signature	Date
RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)				
NI	Air Quality & Greenhouse Gas Emissions	No standards have been set by EPA or other regulatory agencies for greenhouse gases. In addition, the assessment of greenhouse gas emissions and climate change is still in its earliest stages of formulation. Global scientific models are inconsistent, and regional or local scientific models are lacking so that it is not technically feasible to determine the net impacts to climate due to greenhouse gas emissions. It is anticipated that greenhouse gas emissions associated with this action and its alternative(s) would be negligible.	Jeffrey Brower	11/26/14
NP	BLM natural areas	There are no BLM Natural Areas within the proposed project area as per GIS and RMP review	Matt Blocker	12/1/14
NI	Cultural Resources	Pursuant to 36CFR800, a Class III intensive pedestrian inventory would be required prior to any ground disturbing activities. Sites identified and determined to be eligible for the National Register of Historic Places (NHRP) will likely be avoided during the mechanical treatment portion of the project, unless treatment options are such that it would be beneficial to the archaeological resource to treat the vegetation on site.	Leigh Grench	2/15/2017

Determination	Resource/Issue	Rationale for Determination	Signature	Date
NI	Cultural: Native American Religious Concerns	The BLM PFO received a phone call on December 30, 2014 from the Navajo Tribe requesting consultation. The PFO made contact with the Navajo Tribal Historic Preservation Office on December 30, 2014. The PFO is waiting for a call back. Native American tribes were contacted in March, 2017. To date, two tribes (Hopi, Navajo) have identified concerns and/or submitted comments regarding the proposed project	Leigh Grench	2/15/2017
NI	Designated Areas: Areas of Critical Environmental Concern	After review of the approved Price Field Office RMP and GIS layers there are no ACEC's located within the proposed action.	Josh Winkler	12/1/14
NP	Designated Areas: National Trails and Backways	There are no BLM National Trails and Backways within the proposed project area as per GIS and RMP review	Matt Blocker	12/1/14
NP	Designated Areas: Wild and Scenic Rivers	There are no Wild and Scenic Rivers within the proposed project area as per GIS and RMP review	Matt Blocker	12/1/14
NP	Designated Areas: Wilderness Study Areas	There are no Wilderness Study Areas within the proposed project area as per GIS and RMP review	Matt Blocker	12/1/14
NI	Environmental Justice	No minority or economically disadvantaged communities or populations would be disproportionately adversely affected by the proposed action or alternatives.	Kelly Buckner	12/1/14
NP	Farmlands (prime/unique)	No prime or unique farmlands, as identified by the NRCS, based on soil survey data for the county are located in the project area that would be negatively impacted; therefore, this resource will not be carried forward for analysis.	Jeffrey Brower	11/26/14
PI	Fuels/Fire Management	Implementation of the proposed action would result in a decreased threat from severe, high-intensity wildland fire and would contribute to the return to a more historic fire regime, while creating a more diverse ecosystem.	Kevin Cahill	12/1/14
NI	Geology / Minerals / Energy Production	Valuable deposits of oil, gas, and coal are present below the project area, in the subsurface; however, the proposal is not intrusive and not destructive to mineral resources, and the proposal does not minimize or reduce access to mineral resources. There are saleable mineral resources on the surface, but these too will be unaffected by the proposal.	Chris Conrad	12/1/14
NI	Lands/Access	There are several rights-of-way within the project area; however, no adverse impacts are expected as a result of the proposed activity. Care should be taken if equipment will be operating near power or fiber optic lines or other surface facilities.	Amanda Harrington Connie Leschin	11/3/2014 1/30/2017
NP	Lands with wilderness characteristics	After reviewing the GIS and RMP the area of the proposed action does not have wilderness characteristics.	Matt Blocker	12/1/14
PI	Livestock Grazing	Areas within the proposed project location that need to be reseeded will require livestock removal for 2 growing periods.	Mike Tweddell	11/03/14

Determination	Resource/Issue	Rationale for Determination	Signature	Date
NI	Paleontology	Vegetative treatments that do not disturb the surface, such as lop-and-scatter or using a bullhog, do not risk harm to paleontological resources.	Michael Leschin	11.24.14
NI	Vegetation: BLM Sensitive	There may be CRCR8 populations within the project area. However, the suitable habitat for this species is usually barren to scattered PJ on mancos soils. This project has proposed to focus treatment efforts in sagebrush parks that have been encroached by PJ. There will be no disturbance within suitable habitat for CRCR8.	Dana Truman	11/24/2014
PI	Vegetation: Invasive Species / Noxious Weeds	Surface disturbing activities have the potential to introduce/spread invasive species/noxious weeds. This project has the potential to create niches in the vegetation where invasive species/noxious weeds could become established. Halogeton, Russian thistle, tamarisk and musk thistle are invasive species and noxious weeds currently found within the project area.	Stephanie Bauer	12/9/14
NP	Vegetation: Threatened, Endangered, Proposed, or Candidate	After review of BLM records, there are no known populations of listed plants within or nearby the project area. Nor is there suitable habitat for the listed species within the project area. As a result there are no effects to listed species expected if the proposed project is implemented.	Dana Truman	11/24/2014
PI	Vegetation: Vegetation Excluding USFW Designated Species and BLM Sensitive Species	The proposed project is to physically remove vegetation from the landscape. This will affect the vegetative communities involved.	Mike Tweddell	11/03/14
NI	Vegetation: Wetland/Riparian	After review of the Price Field Office Riparian Database, there are riparian areas within the project area, however, the proposed project is designed to treat pinyon/juniper woodland and would avoid wetlands and riparian areas.	Karl Ivory	10/31/2014
PI	Vegetation: Woodlands/Forestry	There are merchantable products within the project area. Pinion pine nuts as well as post/pole and fuel wood trees are within the project area. Mastification of the pinion pines will eliminate pine nut products available to the public. This project has the potential to create a post/pole fuel wood cutting area as well as a fuel wood cutting area.	Stephanie Bauer	12/9/14
NI	Rangeland Health Standards	The proposed project may affect rangeland health standards as the project will affect soils and vegetation. However the analysis for soils and vegetation will be done individually and not surmised in rangeland health.	Mike Tweddell	11/03/14
NI	Recreation	The Proposed Action is in an area (Extensive Recreation Management Area) where recreation opportunities and problems are limited and explicit recreation management is not required. Implementation of the proposed project will have minimal impact on recreation.	Josh Winkler	12/1/14
NI	Socio-Economics	No impact to the social or economic status of the county or nearby communities would occur from this project due to its small size in relation to ongoing development throughout the PFO.	Kelly Buckner	12/1/14

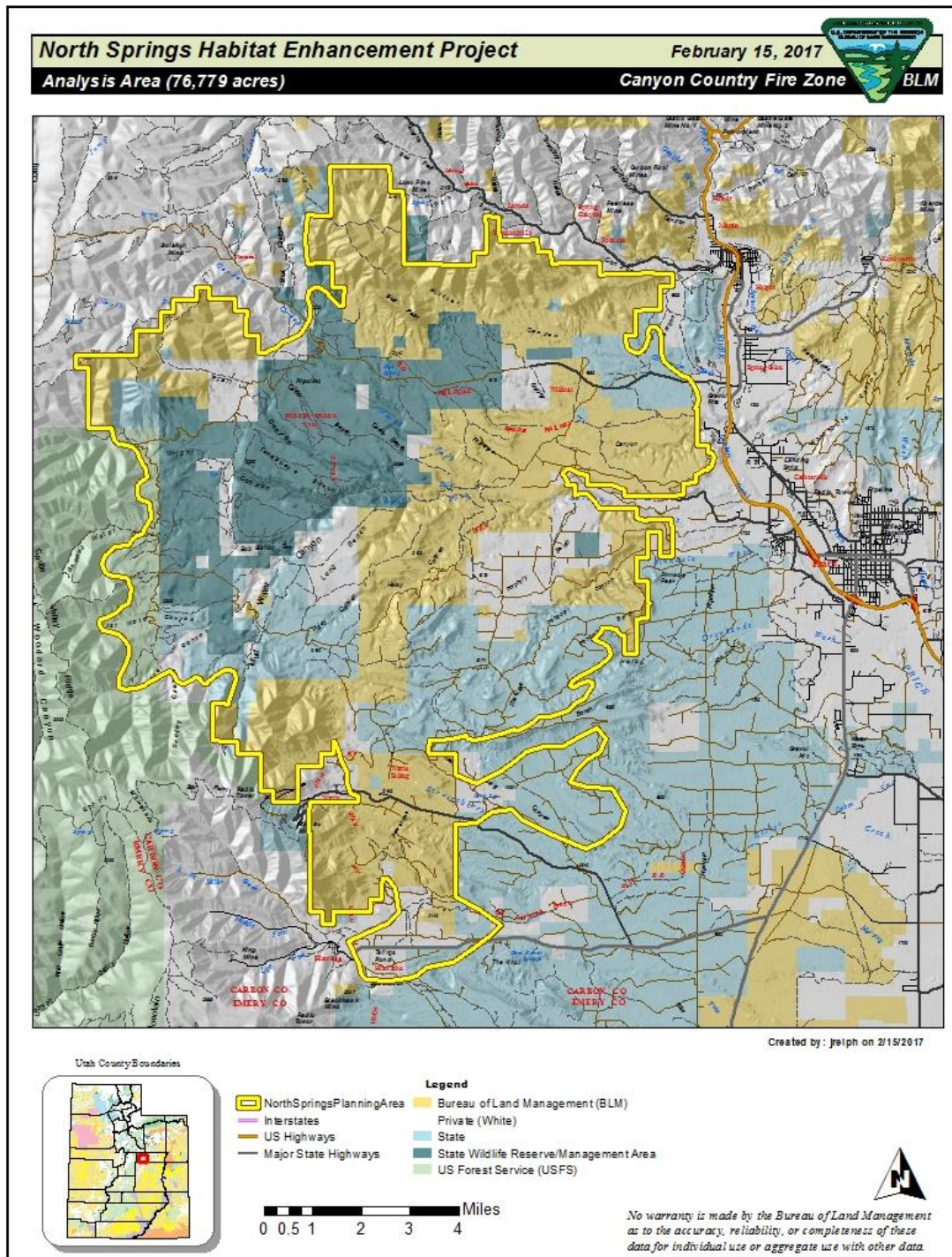
Determination	Resource/Issue	Rationale for Determination	Signature	Date
PI	Soils	Implementation of the proposed action could slightly increase soil compaction, reduce infiltration, and remove vegetative cover in the short term in limited locations. Hand cutting and minimal use of large mechanical methods would reduce this impact. Long-term impacts may include improved soil health and productivity with improved infiltration and reduced erosion rates.	Jeffrey Brower	11/26/14
NI	Visual Resources	The proposed action is located within a class VRM III from our approved RMP & GIS records. VRM III management directives are to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. The proposed action will increase the visuals experience within the area by removing the pinion and juniper encroachment and replacing it with grass and shrub. This will give a different character to the landscape that it is currently lacking.	Josh Winkler	12/1/14
NI	Wastes (hazardous/solid)	No chemicals subject to reporting under SARA Title III will be used, produced, stored, transported, or disposed of annually in association with the project. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported, or disposed of in association with the project. Trash would be confined in a covered container and disposed of in an approved landfill. No burning of any waste will occur due to this project. Human waste will be disposed of in an appropriate manner in an approved sewage treatment center.	Jeffrey Brower	11/26/14
NP	Water: Floodplains	After an inspection of USGS 7.5 minute maps of the area, it is determined no floodplains as defined by EO 11988, FEMA, or Corps of Engineers is found on or near the project area	Jeffrey Brower	11/26/14
NI	Water: Groundwater Quality	Surface disturbance only. Negligible chance of groundwater impacts.	Jeffrey Brower	11/26/14
PI	Water: Hydrologic Conditions (stormwater)	Use of heavy equipment could create ruts and conditions that are conducive to concentrated flows. There are a number of ephemeral drainages that flow through the project area. Care must be taken to avoid disturbance in these areas.	Jeffrey Brower	12/09/14
PI	Water: Surface Water Quality	Several ephemeral streams flow through the project area. Care must be taken to prevent increased sediment yield. Refueling and oil changes need to be in a controlled environment to prevent spills.	Jeffrey Brower	11/26/14
NP	Wild Horse / Burro	As per review of GIS and the Price Resource Management Plan (2008) maps, there are no Herd Management Areas within the project area.	Mike Tweddell	11/03/14

Determination	Resource/Issue	Rationale for Determination	Signature	Date
NI	Wildlife: BLM Sensitive	There are several locations for Ferruginous Hawk nests scattered throughout the project area on BLM land. The proposed action indicates that prior to treatment all ferruginous hawk nests will be identified and those trees will be excluded from the cleared areas; therefore, impacts to this species are not anticipated.	Jared Reese	12/9/2014
NI	Wildlife: Migratory Birds	There are some dry meadows and riparian areas that have been identified as being important breeding habitat for migratory bird species on BLM land. The proposed action identifies these areas and mentions that they will be avoided during crucial times of the year (April 15-August 1); therefore, impacts to these species are not anticipated.	Jared Reese	12/9/2014
NI	Wildlife: Non-USFWS Designated (including raptors)	Portions of the project are located within crucial winter habitat for mule deer and elk on BLM land. Both species utilize this area fairly heavy during the winter months. The proposed action acknowledges this crucial habitat and proposes to adhere to the seasonal timing restrictions (December 1 – April 15) that may be imposed by the authorized officer. In addition, the proposed action would enhance the available food source for these species by increasing vegetation diversity and making larger areas more accessible to these species. Therefore, impacts to these species are not anticipated.	Jared Reese	19/9/2014
PI	Wildlife: Threatened, Endangered, Proposed or Candidate		Jared Reese	12/9/2014
PI	Wildlife: Greater Sage-Grouse (BLM Sensitive Species)	Portions of the project area are located within brood rearing and winter habitat for sage-grouse. Project area also encompasses portions of PHMA and GHMA.	Leah Lewis	8/4/17

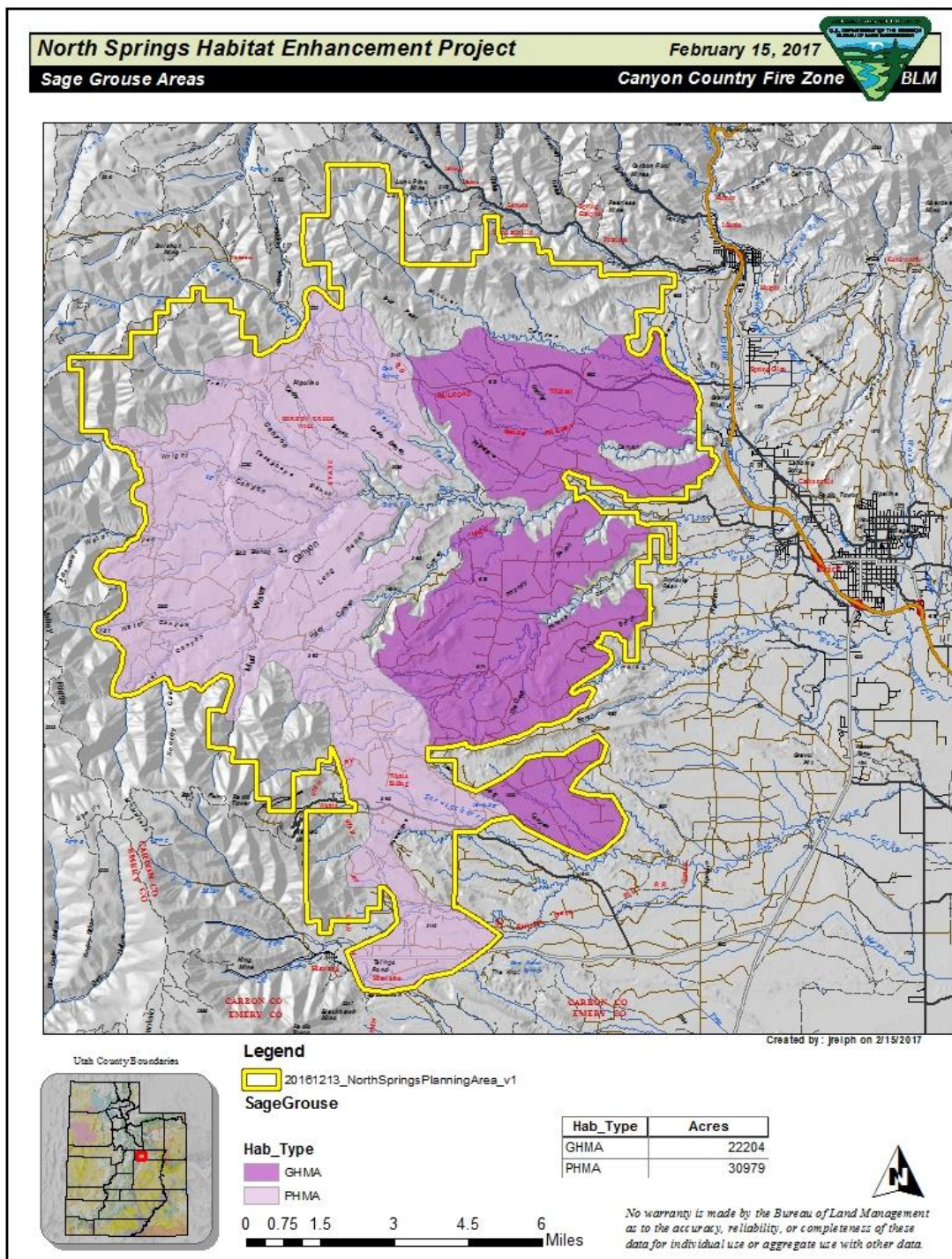
FINAL REVIEW:

Reviewer Title	Signature	Date	Comments
Environmental Coordinator			
Authorized Officer			

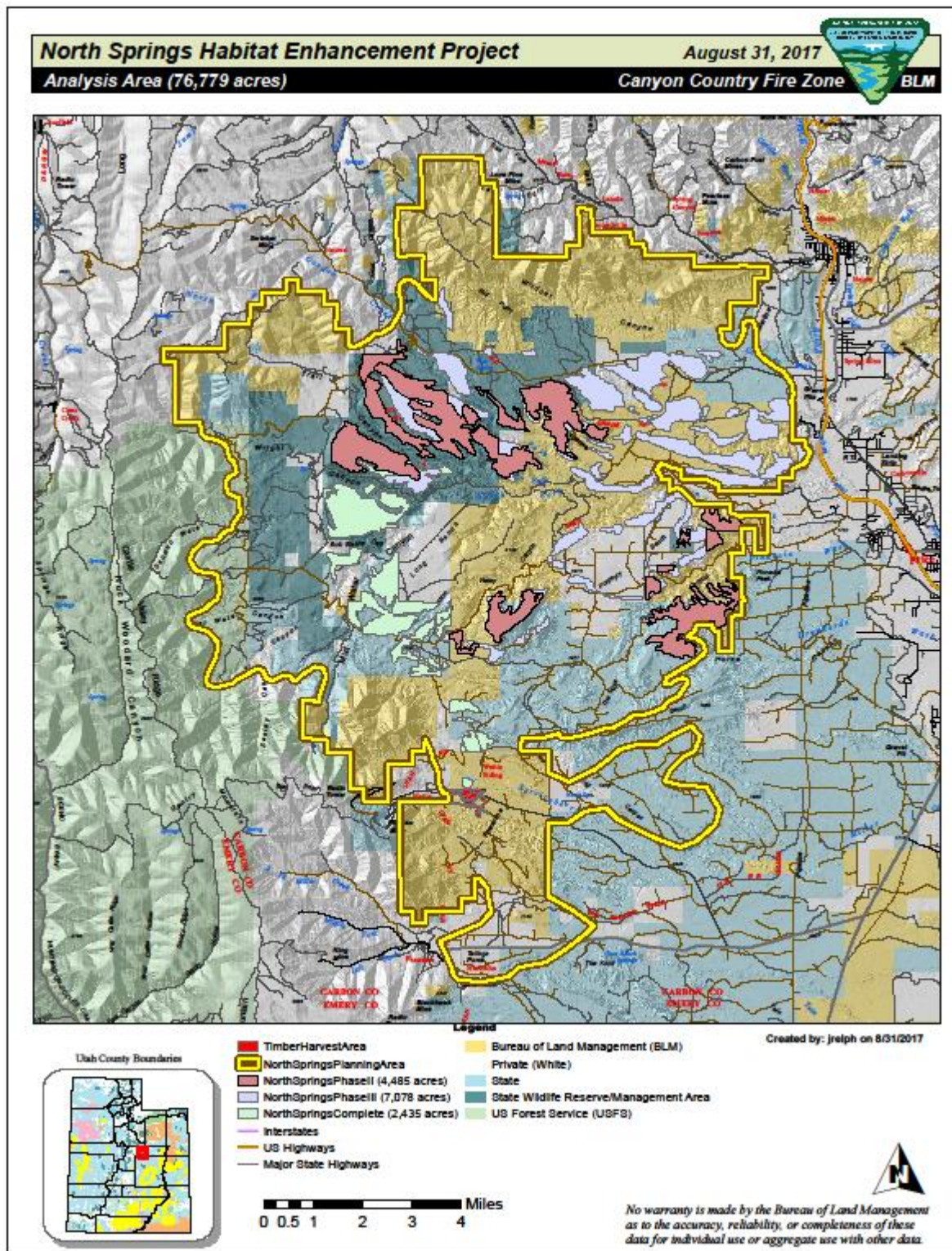
APPENDIX B: Project Analysis Area



APPENDIX C: Sage Grouse Habitat within Analysis Area



APPENDIX D: Treatment Areas



APPENDIX E: Greater Sage-Grouse Habitat Management

Any fire or fuels activity would be subject to the greater sage-grouse Approved Resource Management Plan Amendment (ARMPA), signed in September 2015. This appendix documents the conformance of the proposed action with the Greater Sage Grouse Environmental Impact Statement Record of Decision (ROD) and Approved Resource Management Plan Amendments (ARMPA) and associated management actions for Utah, approved in September 2015.

A. Seasonal and Noise Restrictions:

Seasonal & Noise Restrictions:

After coordination with DWR it was determined that GRSG have not been using this area for some time (Appendix H). Since GRSG have been absent from the project area there will be no seasonal restrictions for GRSG imposed. Furthermore, this area is not designated as winter or brood-rearing habitat, therefore season of use is not identified for GRSG.

B. Conformance With Applicable Vegetation and Fire and Fuels Management Actions:

Goal SSS-1: Maintain and/or increase GRSG abundance and distribution by conserving, enhancing or restoring the sagebrush ecosystem upon which populations depend in collaboration with other conservation partners.

MA-VEG-1: This P-J treatment project is designed and targeted to treat areas to maintain and expand healthy GRSG habitat.

MA-VEG-2: This project was created in order to facilitate movement corridors and connection of GRSG habitat. The goal of the project is to reduce conifer cover and increase herbaceous understory.

MA-VEG-4: The objective of the project is to decrease the present stems per acre to zero or near zero stems/acre. Further objectives are explained in Chapter 2 of the EA.

MA-VEG-5: In PHMA native seed for restoration will be prioritized when available and feasible.

MA-VEG-6: Photos plots will be established before and after the project is implemented. Density transects will also be completed to determine stems per acre before and after the treatment. P-J regrowth will be monitored at 3 to 5 year intervals, by BLM as feasible, after the project is completed which will help to determine future actions in the project area.

MA-VEG-10: Applicable RDFs are addressed in Appendix E (see below).

MA-VEG-14: Areas of this project will be treated for cheatgrass, as discussed in the Proposed Action, on an as needed basis post treatment. Selection and treatment of invasive weeds will be addressed on a case by case basis given their response to the proposed treatment.

MA-FIRE-1: This treatment project was identified as a priority for GRSG Landscape Wildland Fire and Invasive Species Habitat Assessments to address at risk habitat and manage fuels. The project is designed to restore connection and corridors for GRSG populations.

MA-FIRE-2: Applicable fuels management RDFs are addressed in Appendix E below.

MA-FIRE-3: The project will remove encroaching conifer stands as a fuels management tool, to protect and/or improve GRSG habitat.

C. Required Design Features:

The required design features (RDFs) are determined by BLM in the Utah Greater Sage-Grouse Approved RMP Amendment (2015) and are applied to the project to ensure regulatory certainty by using these recommended best management practices. For this project each specific RDF for fuels management that is required are addressed in the table below.

**UTAH GREATER SAGE-GROUSE APPROVED RESOURCE MANAGEMENT PLAN AMENDMENT
(ARMPA) REQUIRED DESIGN FEATURES**

FUELS MANAGMENT

Sub Category	Appendix C – RDF	Commitment/ What are you doing to address the RDF?
Fuels Management	Where applicable, design fuels treatment objectives to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns that most benefit GRSG habitat.	This habitat enhancement project has been strategically designed to protect an existing sagebrush ecosystem and have maximum benefits for GRSG habitat.
	Provide training to fuels treatment personnel on GRSG biology, habitat requirements, and identification of areas utilized locally.	Treatment crews will be informed of the importance of the area and the work that they are implementing.
	Use burning prescriptions which minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of annual grass invasion).	The use of fire in sagebrush parks can force a conversion to grassland, which would be of detriment to habitat value. For this reason, treatment of sagebrush areas would consist only of manual cutting and piling or mechanical shredding. Any piled material would be burned under conditions which minimize fire spread and damage to the sagebrush community.
	Where appropriate, ensure that treatments are configured in a manner that promotes use by GRSG.	This P-J treatment has been strategically designed to promote GRSG use and prevent future threats to birds. This project was also coordinated through UDWR.
	Power-wash all vehicles and equipment involved in fuels management activities, prior to entering the area,	Treatment crews will be made informed that they must power-wash their

	to minimize the introduction of undesirable and/or invasive plant species.	vehicles and equipment before starting the project.
	Design vegetation treatments in areas of high fire frequency that facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to GRSG habitat. Additionally, develop maps for GRSG habitat which spatially display existing fuels treatments that can be used to assist suppression activities.	This project will effectively reduce the fuel load on the landscape by removing P-J trees that have advanced into the sagebrush steppe habitat.
	As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs or one of that referenced in land use planning documentation.	The project area has Phase I to Phase III P-J advancement into the sagebrush steppe habitat. The understory ranges from a major component to a minor component. Once the P-J is removed the forbs, grasses and shrubs will return where they were competing with P-J trees for resources.
	Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.	This project is a collaboration between BLM and UDWR to address the P-J advancement. This project is designed to help prevent the future degradation of sagebrush steppe habitat and also as a fuel reduction project.
	Reduce the risk of vehicle- or human-caused wildfires and the spread of invasive species by installing fuel breaks and/or planting perennial vegetation (e.g., greenstrips) paralleling road rights-of-way.	This project will effectively reduce the fuel load on the landscape by removing P-J trees that have advanced into the sagebrush steppe habitat and have become denser without fire.
	Strategically place and maintain pre-treated strips/areas (e.g., mowing and herbicide application) to aid in controlling wildfire should wildfire occur	This project will effectively reduce the fuel load on the

	<p>near PPMA or important restoration areas (such as where investments in restoration have already been made).</p>	<p>landscape by removing P-J trees that have advanced into the sagebrush steppe habitat. This project will also be monitored every 3-5 years to identify any need for retreatment of the project area to maintain the project and fuel reduction aspects of the project.</p>
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APPENDIX F: Juniper Old Growth Characteristics

True Juniper Woodlands and Old Growth Trees

- ❖ Where do they occur?
 - Sites with shallow or gravelly soils that typically do not support an herbaceous understory (e.g. steep slopes, ridgelines, fans with shallow hardpan).
 - Because of the lack of herbaceous understory these areas experience very infrequent fires.
 - 20% of stands in Utah are more than 200 years old

- ❖ Characteristics of old growth trees
 - Rounded canopy rather than pointed
 - Nonsymmetrical tops
 - Deeply furrowed, shaggy bark
 - Twisted trunks or branches
 - Dead branches and spike tops
 - Large lower limbs
 - Hollow trunks
 - Note: Tree size is not a good indicator of old growth, e.g. juniper in unproductive sites can be short in stature and still portray all of the characteristics of old growth. Conversely, juniper on productive sites can be very tall but lack the general old growth characteristics.



Information from: Miller, R., R. Tausch and W. Waichler. 1999. Old-growth juniper and pinyon woodlands. In: Monsen, S. B.; Stevens, R., comps. 1999. Proceedings: ecology and management of pinyon juniper communities within the Interior West; 1997 Sept. 15-18; Provo, UT. RMRS-P-9. USDA Forest Service, Rocky Mountain Research Station.



APPENDIX G: Fuels Management Best Management Practices (BMP'S)

Fuels Management Activities Standard Operating Procedures and Best Management Practices

These Standard Operating Procedures (SOPs) and Best Management Practices (BMPs) are designed to achieve resource management mitigation proposed by various disciplines specifically for fuels management-related activities. Because fuels management activities are dynamic and largely dictated by budget and contracting constraints, the majority of these mitigation measures are based on site-specific conditions and implemented when necessary to meet resource objectives for fuels management actions. Primary SOPs and BMPs that apply to all fuels management-related activities are listed as items 1, 2, and 3 below.

SOPs and BMPs Applicable to All Fuels Management-Related Activities

1. Areas with sensitive cultural or historical resources will be identified utilizing flagging or GPS/GIS technology prior to project implementation, and will be avoided or protected utilizing buffer zones, hand treatment of vegetation, or other non-ground disturbing actions. If undocumented historic, archaeological, or paleontological resources are encountered during treatment, activities will be stopped until the authorized officer and appropriate field office staff members determine the best option for mitigation.

2. Fuels management activities in designated wilderness and/or Wilderness Study Areas (WSA) will require application of techniques to minimize surface disturbance and permanent impacts to naturalness. Activities in designated wilderness will follow the management prescriptions included as part of the enabling legislation. Activities in WSA's will follow the procedures and guidelines incorporated in H-8550-1, *Interim Management Policy for Lands under Wilderness Review*. Activities in BLM Natural Areas will follow the prescriptions outlined in the Resource Management Plan for the Field Office in which the project is being implemented.

3. Work may be conducted by BLM crews with coordination and potential assistance from other federal and Utah state agencies and/or BLM-contracted crews. In the event a contract is utilized for fuel management activities, the following stipulations will be included in the contract language:

- The Government will identify unit boundaries for the work executed under the contract and will include all known locations of cadastral markings. The contractor will, immediately upon entering a project area, begin to locate and take action to protect all known survey monuments found within the project area. In addition, contractors will be directed to protect any previously unknown survey monuments that are discovered during the duration of the project. Survey monuments include but are not limited to: General Land Office and BLM Cadastral Survey monuments and accessories (including bearing trees, bearing

objects, posts marked with scribing, or bearing tags), reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event obliteration or disturbance of any of the above should occur, the incident will be immediately reported, in writing, to the authorized officer. Where General Land Office or BLM right-of-way monuments or references are obliterated during operations, a registered land surveyor or BLM cadastral surveyor will be contacted to restore the monument.

- Contractors and all contracted representatives will prevent the pollution of air, soil and/or water throughout operations. The contract will include a cleanup and/or restoration clause in the event that operations or equipment failure or other actions by the contractor, contracted employees and/or representatives result in the pollution of public lands. Contract language will also define a “hazardous substance,” specify a “reportable quantity” of released hazardous substance, and describe notification regulations in the event a reportable quantity of hazardous substance is released.
- Contract specifications will include federal regulations regarding sanitary facilities for staging areas and/or worker campsites, trash disposal requirements, clean-up requirements, and other pertinent regulations.

4. All fences constructed or repaired for the purposes of fire and fuels or fire and fuels-related projects will conform to BLM Manual Handbook H-1721-1 design and construction standards. Fencing details will be determined on a project-specific basis by the purpose and use for the fence (type of animal, topography, season of use, intensity of animal pressure against the fence, etc.).

Site-Specific SOPs and BMPs

General Wildlife

(Note: Other stipulations and/or mitigation in addition to those listed below may be required for site-specific treatments.)

1. Trees containing obvious nesting cavities and/or stick nests will be avoided when feasible.
2. Active nest sites will be monitored by a qualified biologist during authorized treatment activities that may impact the behavior or survival of raptors at a nest site.

Range/Livestock

1. Grazing permittees will be given advance notice prior to broadcast burning and when workers with chainsaws and/or mechanical mastication equipment are expected to be in pastures. No fencing will be altered during the project implementation period unless

a specific plan is included in the proposed action. Gates normally kept closed or identified as such will be closed to prevent impact to cattle if they are scheduled to be in a treatment area at the time work is ongoing.

2. Livestock will be excluded from seeded portions of pastures for at least two growing seasons or until management objectives have been accomplished. Coordination, cooperation and consultation with the affected grazing permittees would be followed as outlined in 43 CFR 4130.4 – Authorization of Temporary Changes in Grazing Use within the Terms and Conditions of Permits, including Temporary Nonuse, and under 43 CFR 4180 – Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration. Prior to the implementation of seeding treatments, it is recommended that a Grazing Use Agreement or other written agreement be completed. The written agreement would outline the two year growing season rest requirement and subsequent actions agreed to by both the affected grazing permittees and the BLM.

SOPs and BMPs Applicable to Specific Fuels Reduction Activities

Mechanical Treatment

1. The use of heavy machinery such as mechanical masticators will be discontinued at the discretion of the project inspector during periods of precipitation when soil moisture content could increase the potential for deep ruts and/or excess soil compaction.

2. Prior to mobilization in a new project area, all heavy equipment will be power washed off-site to remove potential contaminants. Cleaned equipment will be inspected by the authorized contracting officer to assure that equipment used in mechanical treatment is free of soil and other debris that could contain invasive weed seed or other plant parts prior to transport and use at the project site.

3. Heavy equipment will generally not be utilized within 100 meters of riparian areas. In areas of special concern such as those requiring removal of dense invasive species, a resource advisor will be consulted. Mechanical fuel removal may be allowed to reduce fuels and/or invasive species in areas of special concern. Native riparian vegetation such as willows and cottonwoods are plant species targeted for restoration and will continue to be selectively avoided during riparian treatment.

Prescribed Fire

1. Prescribed fire is normally conducted in the early spring, late fall, and winter months, and only under specific conditions dictated by humidity, wind speed, moisture levels, and time of day. A detailed burn plan delineates weather and fuel moisture conditions required to meet resource objectives. A test fire is typically conducted prior to full ignition to ensure resource objectives can be met. Ignition of burns are conducted by hand (drip torches using a diesel/gasoline mixture), aerial ignition, or by truck-mounted terra torch (utilizing a gasoline/alumagel mixture). Mitigation measures associated with burning-related hazardous materials are included in the risk assessment, job hazard analyses appendix in each authorized burn plan.

2. All prescribed fire will be conducted consistent with the regulations and policies set forth by the Utah Division of Air Quality permitting process as specified in Utah

Administrative Code Rule R307-204, Emission Standards: Smoke Management, and the Utah Smoke Management Plan. The goal of this process is to minimize the impacts to air quality from prescribed fire projects. These rules and procedures are designed to coordinate multiple burning projects conducted by multiple agencies to assure that prescribed fires are permitted at a time when weather and atmospheric conditions allow for adequate smoke dispersal.

Manual Treatment (Lop and Scatter and/or Hand Piling)

1. Manual thinning is typically used in areas not suitable for mechanical treatment such as steep, rocky slopes, in areas with resources that require mitigation such as cultural or riparian, or in areas where biomass utilization (firewood permitting) is desirable. Cut trees and brush from hand thinning is either scattered across the ground or stacked into piles to add surface fuels for follow-up prescribed fire. Contract stipulations state that pile size will be no larger than six feet by six feet to mitigate potential heat-related soil damage from burned piles.

2. Piles are burned during peak soil moisture conditions, preferably during periods of light snow cover or during precipitation events, to minimize soil sterilization and to decrease mortality risk to nearby live trees. In riparian areas, piles will not be constructed within the center of the draw or in areas that could be impacted by normal flood flows.

Herbicide Use

1. The use of specific herbicide active ingredients and formulations on BLM lands in Utah are authorized by the Final Environmental Impact Statement and Record of Decision (Utah) for Vegetation Treatment on BLM Lands in Thirteen Western States (BLM 1991b), and the Record of Decision for the 17 Western States Vegetation Management Programmatic Environmental Impact Statement, September, 2007. Both of these documents identify potential impacts to the natural and human environment from the use of herbicides, incorporate standard operating procedures and mitigation measures to ensure the protection of resources, and approve for use on western BLM lands specific herbicide active ingredients. Standard operating procedures (SOPs) are the management controls and performance standards intended to protect and enhance natural resources potentially affected by vegetation treatments that include the use of herbicides. The use of a specific list of herbicide active ingredients and formulations is approved contingent upon uses and application rates as specified in an approved Pesticide Use Proposal (PUP) and on individual herbicide product labels. Application of active ingredients is allowed only where state registration permits the use of these ingredients.

2. The BLM will comply with all Utah state registration requirements for the use of herbicides. In herbicide treatment applications, the BLM Canyon Country Fire Zone will follow SOPs for herbicide use identified in the 2007 Vegetation Management PEIS to ensure that risks to human health and the environment from treatment actions are kept to a minimum. In addition to using the SOPs identified in Appendix A, the BLM will also implement mitigation measures described in the 2007 Vegetation Management PEIS to alleviate potential adverse environmental effects as a result of vegetation treatment activities using herbicides. Herbicides may be applied manually with hand-held devices, aerially, or with broadcast sprayers from an ATV. In fuel management activities that

include the use of herbicides, both the SOPs and mitigation measures mentioned above will be attached to the environmental assessment as appendices.

Seeding

1. Fuels management actions may include seeding portions of or an entire project area following or prior to treatment with both native and selected non-native grasses, forbs and browse species. Seed selection is determined through collaboration with resource specialists and from monitoring results in similar vegetative communities. Seed selection is also based upon the most current data regarding the establishment of species likely to promote successional changes toward the desired vegetative community.

2. Seeding can be accomplished with a broadcast spreader or drill seeder, harrow or harrow chain dragged behind mechanized equipment, roller chopper, tractor/dozer, or through aerial application. Seeded portions of treated areas will be rested from grazing for a minimum of two growing seasons following seeding.

Monitoring

1. Transects to document fuel bed characteristics and vegetation composition are established prior to implementation within selected proposed treatment areas. When feasible, transect readings and/or photo plots are documented pre-treatment and at one, three and seven year intervals following treatment completion. Monitoring results are incorporated into management decisions regarding future resource actions that may involve maintenance burning, additional seeding, reintroduction and/or adjustment of grazing seasons or numbers, additional mechanical or herbicide treatment and other actions.

2. Management decisions requiring treatments not previously analyzed would initiate further environmental assessment.

Miscellaneous

1. In select areas, slash and debris from fuel management activities along designated roads or other accessible areas may be made available to the public for wood harvest.

2. All-terrain vehicles (ATVs) may be utilized at various times by BLM and/or contract crews throughout the project area to transport fuel, supplies and equipment. ATV's will avoid disturbance to any identified archaeological sites and/or other buffered areas.

3. BLM personnel will periodically observe ongoing treatments to ensure no adverse effect to nesting raptors or other bird species or to cultural and/or historic remains.

Fireline Rehabilitation Guidelines

The following guidelines can be used in whole or in part depending on ecological site needs, severity of disturbance and management directive within the Canyon Country Fire Zone fuels program(CYFZ).:

Fireline:

- 1.) Pull soil, duff, litter and rocks over line

- Rake the line to scarify the soil surface; pull soil, duff, litter and rocks back into original position and mimic natural grade
- Rehabbed line should blend with surrounding contours.

2.) Scatter Brush over the Line

- Cover at least 50% of the fire line
- Scattered duff, needle litter, and brush should appear random to eliminate the appearance of a straight line disturbance. In general the amount and type of duff, litter, and brush should match the surrounding area.

3.) Construct water bars or berms to reduce channeling and deflect erosion on slopes

- Temporary berms are preferable to water bars. When constructing water bars utilize local woody material
- Use the following table to create water bars or berms:

Slope %	Spacing (Ft.)
2	250
5	135
10	80
15	60
20	45
25	40
30	35

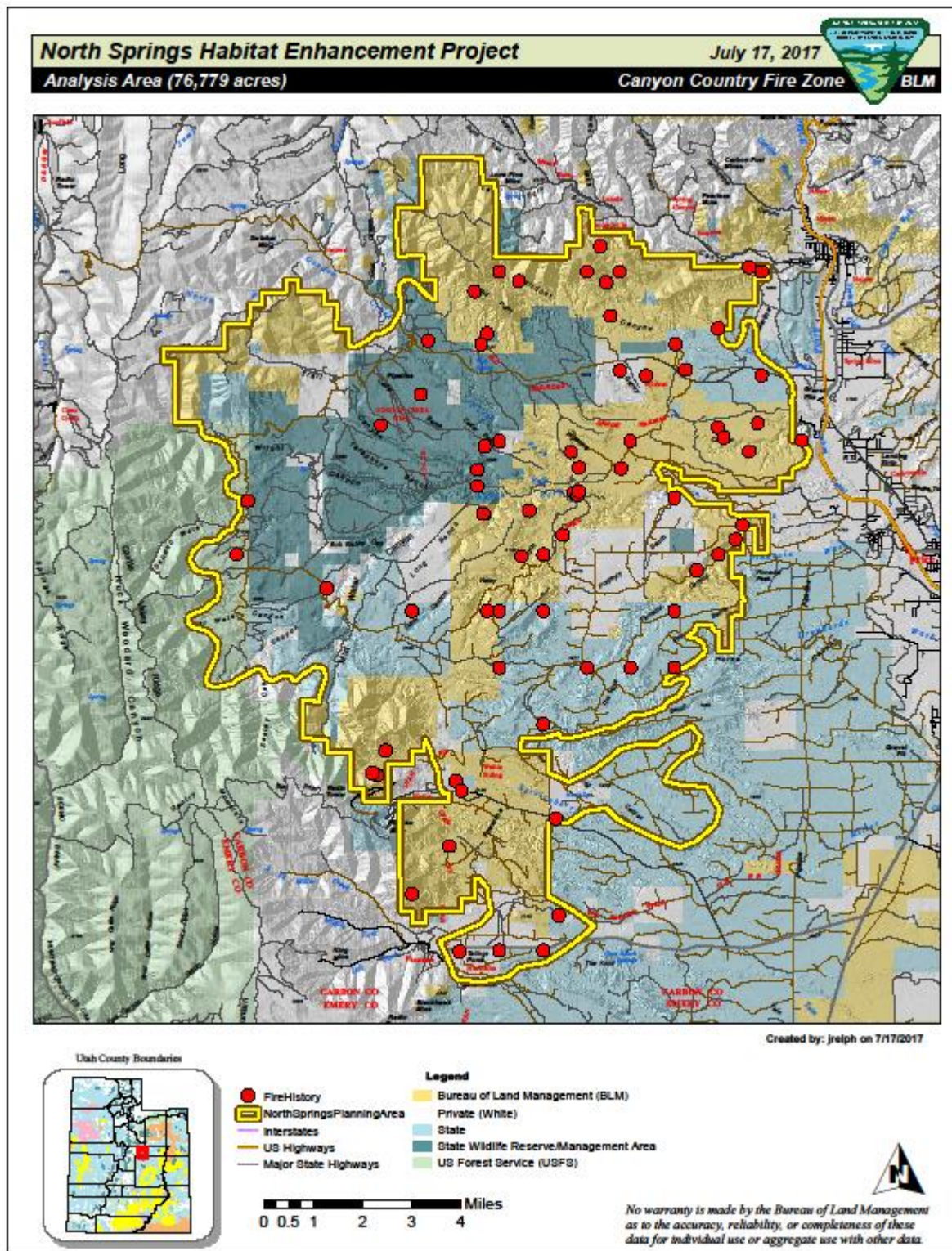
- Construct at 45 degree angles to the contour

Aesthetic Considerations

- When replacing larger rocks in the fireline, place the weathered side up
- Obliterate cup trenches and ditches
- Flush cut all stumps
- Remove all flagging, signs, and garbage associated with activity

Walk through adjacent undisturbed areas to take a look at your rehab efforts to determine your success at returning the area to as natural as possible.

APPENDIX G: Fire History



APPENDIX H: DWR Sage-grouse Letter



State of Utah DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Wildlife Resources

GREGORY SHIEHAN
Division Director

May 25, 2017

Joshua Relph
Canyon Country Fuels Planner
BLM Moab Field Office
82 East Dogwood
Moab, Utah 84532

Subject – North Springs Sage Grouse Habitat

Dear Mr. Relph:

The North Springs fuels project being evaluated on Bureau of Land Management (BLM) lands was developed in partnership between the Utah Division of Wildlife Resources and the BLM. Portions of the project fall within the Carbon Sage Grouse Management Area. The area is currently mapped as occupied yearlong habitat. However, sage grouse have not been documented within the project area in recent history. In order to create habitat that may be suitable for sage grouse, this project is necessary. In its current condition, sage grouse will likely not use the area due to density of pinyon-juniper. Sage- grouse will not be negatively impacted as a result of this project.

UDWR appreciates the opportunity to provide comment on this proposal. If you have any questions, please call Makeda Hanson (435-630-0805) in our Price office.

Sincerely,



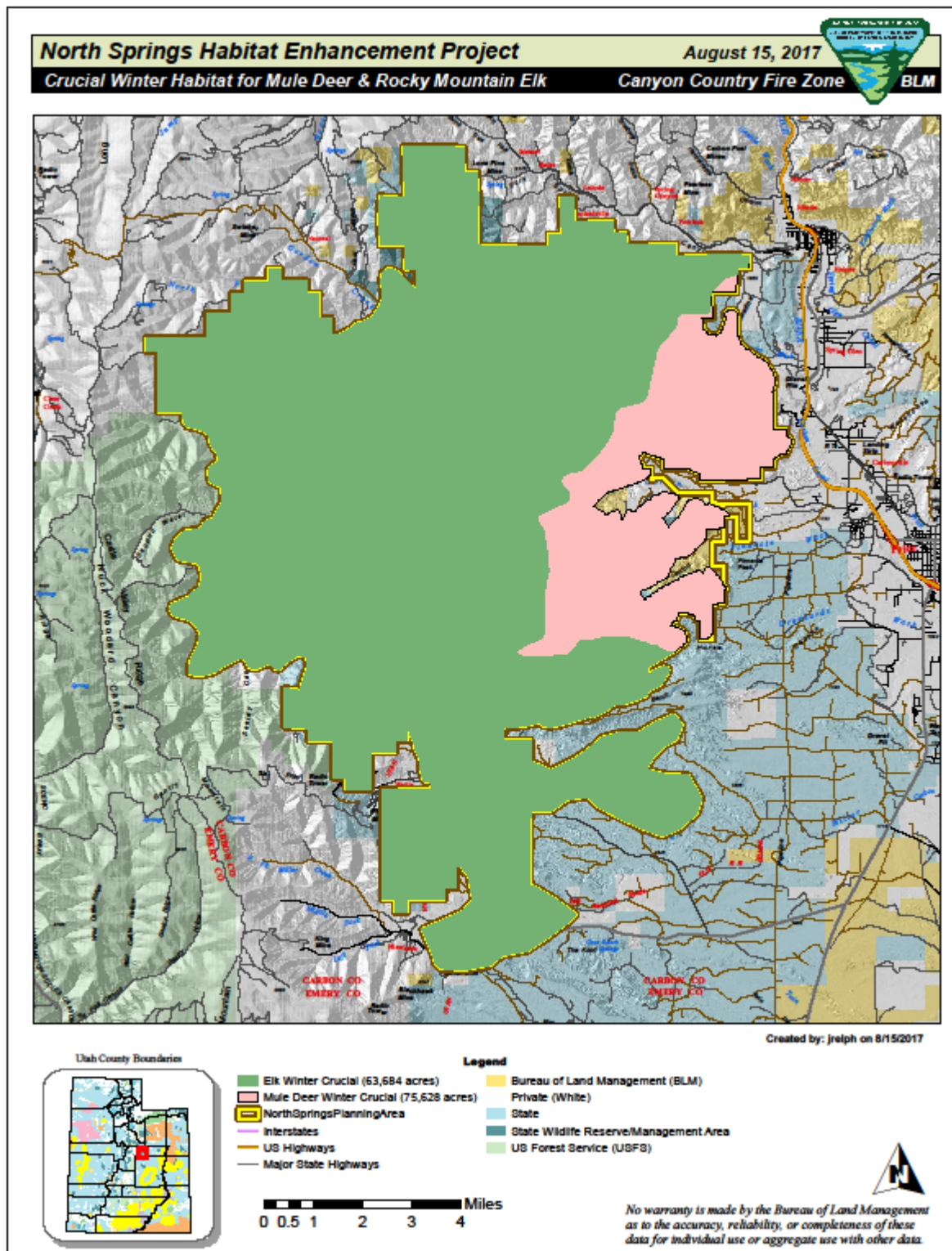
Chris Wood
Regional Supervisor

CW/mjh

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APPENDIX I: Crucial Habitat



APPENDIX J: Seed Mix

Seed: Common Name	Seed: Scientific Name
Utah Sweetvech	Hedysarum utahensis
Purple Prairie Clover	Dalea purpurea
Rocky Mountain Bee Plant	Cleome serrulata
Firecracker Penstemon	Penstemon eatonii
Annual Sunflower	Helianthus annuus
Western Yarrow	Achillea millefolium
Stansbury Cliffrose	Cowania mexicana
Sagebrush, Wyoming	Artemisia tridentata wyomingensis
Winterfat	Ceratoides lanata
Fourwing Saltbush	Atriplex canescens
Sandberg Bluegrass	Poa secunda
Western Wheatgrass	Pascopyron smithii
Galleta	Pleuraphis jamesii
Indian Ricegrass	Achnatherum hymenoides